# JOURNAL

OF THE

# CEYLON BRANCH

OF THE

# ROYAL ASIATIC SOCIETY.

EDITED BY

JOHN CAPPER, Esq.,

HONORARY SECRETARY.

1856-8.

BRITISH MUSEUM NATURAL HISTORY

AGENTS:

Messrs. VAN VOORST & Co., 1, PATERNOSTER ROW, LONDON.
Messrs. THACKER, SPINK & Co., ST. ANDREW'S LIBRARY, CALCUTTA.
J. HIGGINBOTTOM, MADRAS.

W. SKEEN, GOVERNMENT PRINTER, COLOMBO, CEYLON.

MDCCCLVIII.

CONTENTS.

PAGE.

Entomological Papers; being chiefly Descriptions of New Ceylon Coleoptera, with observations on their habits, &c. By J. Nietner, Esq. ... ... 1

Description of New and Little known Species of Ceylon Nudibranchiate Molluscs, and Zoophytes. By E. F. Kelaart, M.D., F.L.S., &c. ... 84

Account of the Works of Irrigation constructed by King Prakrama Bahoo, contained in the Sixty-eighth and Seventy-ninth Chapters of the Maha Wanso, with Introductory Remarks. By Louis de Zoysa, Esq., Modliar 140

Topographical and Statistical Account of the District of Noowerakalawiya. By A. Oswald Brodie, Esq. ... ... ... ... ... 150

On the Principles of Singhalese Chronology. By the Rev. C. Alwis ... 181

Remarks on the supposed identity between Nàgasèna and Nagarjuna. By James De Alwis, Esq., Assistant Secretary ... ... ... 195

An Introductory Paper on the investigation of Singhalese Music. By Louis Nell, Esq. ... ... ... ... ... ... ... 200

A Synopsis of the Sâiva Siddântam. By M. Coomarasamy, Esq., Advocate... 207

Terms of Address and Modes of Salutation in use amongst the Singhalese. By James De Alwis, Esq., Assistant Secretary ... ... ... 219

APPENDIX:—Proceedings of Meetings, &c. ... ... ... ... i.

N° 9

N° 10

# JOURNAL

OF THE

# CEYLON BRANCH

OF THE

# ROYAL ASIATIC SOCIETY,

## 1856-61.

BRITISH MUSEUM
NATURAL HISTORY

## VOLUME III.

---

*EDITED BY THE HONORARY SECRETARY.*

---

"THE DESIGN OF THE SOCIETY IS TO INSTITUTE AND PROMOTE ENQUIRIES INTO THE HISTORY, RELIGION, LITERATURE, ARTS, AND SOCIAL CONDITION OF THE PRESENT AND FORMER INHABITANTS OF THE ISLAND, WITH ITS GEOLOGY, MINEROLOGY, ITS CLIMATE AND METEOROLOGY, ITS BOTANY AND ZOOLOGY."

---

COLOMBO:
PRINTED AT THE "CEYLON OBSERVER" PRESS.

1894.

# CONTENTS OF VOLUME III.

## No. 9.—1856-58.


PAGE.

Entomological Papers, being chiefly Descriptions of Ceylon Coleoptera, with observations on their habits, &c.—By J. NIETNER, Esq. ... ... 1

Description of new and little-known Species of Ceylon Nudibranchiate Molluscs, and Zoophytes.—By E. F. KELAART, Esq., M.D. ... ... 76

Account of the Works of Irrigation constructed by King Parákrama Báhu, contained in the 68th and 79th Chapters of the Maháwaṃso, with Introductory Remarks.—By L. DE ZOYSA, Mudaliyár ... ... ... ... 125

Topographical and Statistical Account of the District of Nuwarakaláwiya.—By A. O. BRODIE, Esq. ... 136


## No. 10.—1856-58.


On the Principles of Siṃhalese Chronology.—By the Rev. C. ALWIS ... ... ... 163

Remarks on the Supposed Identity between Nágaséna and Nágárjuna.—By JAMES DE ALWIS, Esq., Assistant Secretary ... ... ... 176

An Introductory Paper on the Investigation of Siṃhalese Music.—By LOUIS NELL, Esq. ... 181

A Synopsis of the "Sâiva Siddântam."—By M. COOMARASAMY, Esq., Advocate ... ... 187

Terms of Address and Modes of Salutation in use amongst the Siṃhalese.—By JAMES DE ALWIS, Esq., Assistant Secretary ... ... 198

APPENIDX:—Proceedings of Meetings, &c. ... i


## No. 11.—1858-59.*


The Laws of the Buddhist Priesthood.—By the Rev. D. J. GOGLRLY ... ... ... 253


* Pages 253-276 have been wrongly numbered 1-24.

| | Page. |
|---|---|
| Notes on the Mythological Legends of the Siṇhalese.—By J. De Alwis, Esq., Assistant Secretary .. | 262 |
| A Statistical Enquiry into the state of Crime in Ceylon.—By J. Capper, Esq., Honorary Secretary ... ... ... .... | 293 |
| Siṇhalese Rhetoric.—By J. De Alwis, Esq., Assistant Secretary ... ... ... | 308 |
| Scripture Botany of Ceylon.—By W. Ferguson, Esq, | 316 |
| Remarks on the Supposed identity between Nágárjuna and Nágaséna.—By J. De Alwis, Esq., Assistant Secretary ... ... ... | 346 |
| Expenditure on Public Works in Ceylon.—By J. Capper, Esq., Honorary Secretary ... ... | 354 |
| Appendix :—Proceedings of Meetings ... ... | i |
| Society's Circular ... ... ... | xii |
| Correspondence concerning the Mauritius Exhibition ... ... ... ... | xiv |
| Correspondence with the Society of Arts ... | xv |

## No. 12.—1860-61.

| | |
|---|---|
| Health and Disease in Ceylon.—By Boyd Moss, Esq., F.R.C.S. ... ... ... ... | 361 |
| Cinnamon.—By James D'Alwis, Esq. ... ... | 372 |
| Notes on the District of Badulla and its Natural Products.—By W. C. Ondatjie, Esq., Assistant Colonial Surgeon ... ... ... | 381 |
| The Difference between the Páli and the Prákrit-Mágadhì of Vararuchi.—By James D'Alwis, Assistant Secretary ... ... ... | 429 |
| On Health and Diet, with especial reference to Children and Youths in Ceylon.—By Barcroft Boake, B.A., Vice-President, Asiatic Society, Ceylon ... ... ... ... | 434 |
| Appendix :—Proceedings of Meetings, &c. ... | i |
| Letters from Sir J. E. Tennent and Dr. Buist to the *Athenæum*, relative to the Fresh Water Wells of Jaffna ... | xi |

British Museum Natural History

# JOURNAL

OF

# THE CEYLON BRANCH

OF THE

# ROYAL ASIATIC SOCIETY.


---

*Entomological Papers; being chiefly Descriptions of New Ceylon Coleoptera, with such Observations on their habits, &c., as appear in any way interesting. By* J. NIETNER, *Esq., Member of the Society of Naturalists of Berlin, Entomological Society of Stettin, &c. (Nos. I.—IV. reprinted.)*

---

## No. I.

*Introductory Note on the publication of New Species under disadvantages such as describing entomologists necessarily labour under in countries remote from the European centres of science.*

I little doubt that the following descriptions of new Coleoptera will meet with anything but approbation from the entomological world at home. As, however, in spite of this anticipation of an ungracious reception, I do not for the present intend to desist from my purpose of publishing such descriptions, I may as well try to vindicate this measure by setting forth the reasons which induce me to consider the difficulties which beset the path of the entomological author in this country as not insurmountable.

The objections raised against me will be these:—considering the state entomological literature is still in, that is to say, considering that it has not, generally speaking, been condensed into a certain limited and obtainable number of

volumes, as is the case in the higher branches of Zoology and Botany; that, on the contrary, the bulk of it consists of fragments which float without order in the misty and unfathomable ocean of scientific journals; it is next to impossible that an individual entomologist abroad should surround himself with this shapeless mass of learning, and keep himself by this or other means, so well informed of the details of the actual progress of the science, as not to be exposed to mistakes of one kind or another, but more especially to creating synonymy in attempting to work independently. It will further be said against me, that not having the facilities and the wholesome check which arise from the diligent use of extensive and well named collections, not even having the gratification of a brother entomologist's views and opinions on doubtful cases, it will be impossible even to determine whether an insect be new or not; and from these reasons (the resumé will be) entomologists abroad should confine themselves to collecting and observing the habits of the objects of their attention, but they should never go to print with matters on which it is an impossibility for the ablest among them to be quite competent. These arguments are unfortunately too true, but still, I think, admit of being mitigated sufficiently to come to final conclusions less disheartening to the entomological student abroad, than the above.

First of all, every entomologist gives preference to a certain order of insects—say Coleoptera—and in this even, in almost all cases, to one or two particular families. In studying for the publication of new species, under the disadvantages just mentioned, he will confine himself to this order, or perhaps family. Now, although as objected above, the information existing on this particular branch, is for the most part fragmentary, still there are certain families, on which it has received a tangible shape, through condensation by old hands: Burmeister's Lamellicornia, Dejean's Carabidæ, Erichson's

Staphylinidæ, Schoenherr's Curculionidæ, Boheman's Cassidæ, Westwood's Paussidæ, etc., as well as the latter author's general work on the families, and Lacordaire's on the genera Coleopterorum, diligently consulted, go as guides a long way, and should, although some of them have by the rapid progress of the science, grown rather antiquated, guard against a number of mistakes of a systematic nature. As to whether a beetle be new or not, I admit, that in forming an opinion on this question, the entomologist, situated as above, will have quite as much to be guided by a certain tact (not clearly definable, but understood by scientific men) than by anything else; and I am forced to concede, that under any circumstances almost, it is totally impossible to arrive at an *indisputable certainty* either the one way or the other. This, however, excludes by no means the possibility of his forming an opinion with so much precision as to enable him to pronounce in the matter with a very *high degree of confidence, and all probability* in his favour. In attempting to come to a decision on this difficult point, he will receive a first superficial idea, from careful reflection on certain accidental circumstances, such as size, scarcity, or other peculiarities of the insect in question. This idea, whichever way it may incline, will then either gain or lose in strength by diligent reference to his library, until at length, with a certain amount of tact and judgment, he will arrive at a result, which under such circumstances, must carry much weight with it. I shall illustrate this case by an example:—If, for instance, after collecting five years in Ceylon generally, and in the Western Province more especially, I find at the latter place an insect—say the Chlænius pulcher described below—for the first time—am I not entitled to consider it as very scarce? If on consulting my library I discover nothing which can possibly refer to it (finding that not a single Chlænius is marked as occurring in Ceylon), are not the chances greatly in favour of its being an undescribed

species?* If again, I collect beetles as small and inconspicuous as the Trichopteryx described below, and consider at the same time, that, although they are in certain localities of common occurrence, no professional Coleopterologist has ever collected before me in this Island; if, moreover, again my library offers nothing that could possibly refer to them individually (there being hardly an Asiatic species mentioned),—am I not under these circumstances justified in considering them as undescribed? Decidedly.—Circumstances like these would indeed be altogether conclusive, if there was not a chance of the beetle's occurring in some neighbouring country, and its having thence found its way into the normal collections of Europe. The possibility of such being the case, enhances the difficulties of the case, of course, very materially; and I am forced to admit, that the means of overcoming them are very unreliable. One deficiency descriptions of new species furnished under these circumstances will almost always have,

---

* Synonymy is, and always will be, an unavoidable evil to which descriptive science is liable under *any* circumstances. My arguments are merely intended to uphold the possibility to reduce it to such a nature, and to limit it to so small an extent, as to be of little importance if weighed against the merits the publications in which it occurs may be possessed of in other respects, and, therefore, to be pardonable. In case, however, I should eventually ascertain that I am mistaken on this point, I shall then abandon my pursuits, or at all events, my present mode of following them up. I feel certain, that every enthusiastic naturalist, who has travelled in foreign parts, will support my cause, and understand and appreciate my striving to become the herald of my own discoveries.

I am well aware, that there is more than one way to attain this end, and that the one I have selected is perhaps not the best; but circumstances have hitherto barred me from those upon which I might lay myself less open to censure. In positions like mine only, where they are my principal support, books are well tested; and whoever has tested them under such circumstances, will know that much of the synonymy created abroad, is referrible to them, and *not* to the student.

namely the comparison (so desirable, if not essential, in large genera) with another allied and known species, will be wanting; but this stands or falls with the system from which it is inseparable.

I think I have said enough to shew, that the disadvantages the entomologist encounters here, or in other places similarly situated, in *conscientiously* attempting to publish new species may—(his principal assistance being perseverance, a good library, and tact—entomological instinct I am almost tempted to call it)—I am far from saying *entirely*, be overcome so far as to expose him, from *want* of resources in the execution of his plan, *to no more mistakes* than entomologists expose themselves to under more favourable circumstances from *neglecting them.* But I am not satisfied with obtaining the simple grant of permission to describe on the spot a part of what he collects. I claim more for the entomologist abroad:—I wish to show that he should naturally be expected, nay desired, to do so; for although he labours under distressing disadvantages in some respects, he happily enjoys a proportionate share of advantages in others. It is unsatisfactory in the extreme for an enthusiastic entomologist to be obliged to let his collectings go out of his own hands,—see others reap the honors from them, which are to be reaped on such occasions, or perhaps see as it were a gulf close over them,—hear no more of them, and find himself forgotten. For what is a mere collector? Let him display as much industry as possible, he is hardly looked upon as an entomologist, certainly, as long as he is prevented from publishing anything, not as a scientific one. Now, if such a man merely desists from publishing the fruits of his researches from want of resources to assist him to go creditably through such a task,—if he suffers his collections to go out of his hands, because he is too true a lover of science not to see the credit in a great measure due to himself reaped rather by another than to hoard

up his entomological treasures, a useless heap, eventually to be destroyed by moths and time:—I say, that a man who acts upon principles like those, finds himself not seldom disheartened in the prosecution of his studies under difficulties such as I have set forth. If, however, as I have endeavoured to point out, these difficulties can be overcome to a very considerable extent, is anything more natural than that he should be the herald of his discoveries himself? Could anything be more unkind and ungenerous on the part of his scientific brethren at home, than to oppose and discourage him by their disapprobation? I might enlarge on this subject, which has been a sore one with me for a long time, to a great extent, but I think this is sufficient to direct the reader into the train of my ideas and to enable him to follow it up.

I hasten therefore to conclude. As mentioned above, the Tropical entomologist has a proportionate share of advantages to balance what falls to his lot of the contrary; one of these advantages which he has over his brethren at home is, that he has an opportunity of seeing and studying alive what can at home only be examined in a state differing more or less from that of life. Therefore, if he is *enabled* and *expected* to describe new species, it is moreover *highly desirable* for the sake of the promulgation of *sound* information, that he should do so, that he should avail himself of this, his principal advantage, and describe, fresh from nature, as many of his favourites and their habits as possible; and discouraging him in such an undertaking on any of the above grounds would be discouraging the progress of science in general.

---

## 1. Chlænius *pulcher*. N.

C. elongatus, subconvexus, subglabratus, æneo-viridis, elytris obscurioribus, limbo pedibusque flavis, subtus piceus. Long. corp. $6\frac{3}{4}$ lin.

Caput oblongum nitidissimum, ante oculos 2-impressum. Mentum dente fortiter excavato. Antennæ art. 3° quarto sesqui longiore. Thorax obcordatus basi angustatus quadratus, latitudine antica quarta parte longior, parce punctulatus, antice lateribus deflexus, postice dorsoque planus, basi 2-impressus. Elytra striata, ad strias, præcipue apicem versus, subtilissime pilosa, flavo-marginata. Pedes flavi, spinulis castaneis. Abdomen flavo-marginatum.

Specimen singulum m. in ripis Mahæ-Oyæ fluvii prope Negombo cepi.

Distinguished by its elongate shape. The head is of a bright green colour with the labrum and the mandibles of a deep, and the antennæ and palpi of a light brown, the latter being darkened towards the end. The thorax is of the same colour as the head, reflecting a copper hue from the back, its anterior angles are obtuse, the basal ones being right. The elytra are of the same greenish copper colour but darker, they are impressed with longitudinal lines, which are bordered on each side by a row of minute hairs. They as well as the abdomen have yellowish margins.

## 2. Chlænius *rugulosus*. N.

C. subconvexus, subglabratus, thorace occipiteque rugulosis cupreis, elytris nigro-viridibus, pedibus, elytrorum limbo lunulisque apicalibus flavis, subtus piceus, abdomine apice margineque flavis. Long. corp. $6\frac{1}{4}$ lin.

Caput fronte 2-impressum, subtilissime longitudinaliter rugulosum. Menti dens laciniis extus rotundatis. Thorax ovatus basi quadratus, lateribus valde deflexus, postice obsolete 2-impressus, parce punctatus, subtiliter transversim rugulosus. Elytra striata, striis apicem versus per paria coëunsibus, ad strias pilosa, apice utrinque lunula flava signata.

Pectus abdomenque picea, hoc segmentis 2 ultimis, præcedento dimidio margineque flavis.

Specimen unicum f. ubi præcedentem cepi.

The head finely longitudinally, the thorax transversely rugose; the latter with rounded and deflexed sides. The mandibles are of deep brown, the palpi and antennæ of yellowish colour darkened towards the tip. The lobes of the mentum tooth are externally rounded. The elytra are marked by two subapical spots of yellowish colour and semilunar shape, (the back of the lunulæ being turned towards the suture.) The striæ verge near the apex by twos into each other. The abdomen is distinguished by having a yellow margin and apex.

3. SCARITES *minor*. N.

S. elongatus, niger, nitidus, subtus nigro piceus, pedibus piceis, tarsis, antennis palpisque castaneis. Long. corp. 5 lin. lat. 1½ lin.

Caput subquadratum, ante oculos 2-impressum, pone oculos irregulariter sulcatulum. Mandibulæ validæ inter medium et basin fortiter dilatatæ, obtuse dentatæ, dextera dente obtuso subapicali, supra subtusque longitudinaliter sulcatæ. Antennæ art. 1° sequentium trium-, 2° tertii prope longitudine. Thorax oblongo-quadratus, angulis anterioribus obtusis, posterioribus oblique truncatis. Elytra thoracis capitisque prope longitudine, striata, ante medium ad striam $2^m$ uni-, apicem versus ad striam $3^m$ 2-punctata, punctis piliferis, basi granulata, angulis oblique-truncatis. Pedes anteriores tibiis apice extus 5 dentatis, dentibus 2 ultimis parvis, omnes tarsis subtus leviter excavatis.

In prov. occid. arenis humidis sub vegetab. putrescent. specimina nonnulla legi.

Scarce, but little distinguished excepting by its small size. The head is subquadrate, in front with two deep longitudinal impressions, behind the eyes finely sulcated. The labrum is of the usual shape, the eyes are not very prominent; the antennæ are of about the same length as the head, the first joint is about as long as the three following together, the second, which

is generally longer than the third, is in this case of the same length, joints 1-4 are naked, 5-11 pilose, increasing towards the tip gradually in size and thickness, taking at the same time a subquadratic and depressed shape. The mandibles are strong, much dilated and dentated from before the middle to the base, the right one having an additional subapical tooth. The maxillæ also are strong, but slightly bent at the apex, where they are also slightly excavated. The labial palpi have the last joint longer than the third elongated and elliptic. The thorax is oblong, with the basal angles obliquely truncated. The elytra are oval, striated, granulated at the base, and have, as has also the thorax, a narrow margin. The anterior tarsi are furnished externally with 5 teeth, the two last ones of which, however, are very small, the posterior legs are similarly provided, but the teeth are indistinct. The joints of the tarsi are slightly excavated below. The sides of the body below are rugose.

4. CLIVINA *rugosifrons*. N.

C. ferruginea, capite, thorace abdomineque piceis. Long. corp. $4\frac{1}{3}$ lin. lat. $1\frac{1}{3}$ lin.

Caput rugosum, inter oculos elevatum, elevatione plana antice profunde 1-impressa. Mentum lobis subtiliter sulcatis. Antennæ robustæ thoracis medium vix attingentes, art. ultimo elongato penultimo-, art. 2o tertio sesqui longiore. Thorax subquadratus antice parum angustatus, elytrorum latitudine, subtus parce punctatus, prosterno sulcato. Elytra striata, in striis punctata. Pedes tibiis anterioribus apice extus 4 dentatis, subtus excavatis, reliquis fortiter spinosis, tarsis articulis margine apicali setoso.

In prov. occid. sub vegetab. putrescent. infrequentissime legi.

A large and distinguished species. The head is very rugose, the clypeus is contracted behind the apical angles, and then produced again into another pair of angles. The labrum is transverse, slightly sinuated in front, with the angles rounded and setose. The mentum is quadrate, the lobes rounded at

the apex and slightly sulcated, the tooth is strong, of equal length with lobes and of the typical spearheaded form. The ligula has the apical angle much elongated, terminating in a membranaceous bristle which is bifurcate at the tip. The maxillary palpi have the last joint elongate, cylindrico-conic; that of the labial ones is still more elongate, elliptic. The antennæ have the basal joints elongate, those towards the tip rounded. They and the legs are hairy, otherwise the insect is of a bright polished surface.

5. CLIVINA *elongatula.* N.

C. elongata, subdepressa, supra nigro-picea, subtus picea, pedibus elytrorumque margine castaneis, antennis oreque dilutioribus. Long. corp. vix 3 lin. lat. $\frac{3}{4}$ lin.

Caput triangulare, subtiliter punctato-rugosum. Palpi articulo ultimo apice leviter truncato. Thorax oblonge quadratus, infra apicem leviter sinuosus, parce obsoleteque transversim strigosus. Elytra striata, in striis punctata, ad striam 3m utrinque 4 punctata. Subtus parce punctata.

Ubi præcedentem frequenter legi.

I have not dissected the labium of this species, which, however, is at once recognised by its depressed, and, in proportion to its width, very long shape. The labrum, antennæ and legs are so much like those of the former, that they need no further description.

6. CLIVINA *maculata.* N.

C. picea, elytris ferrugineis infra medium macula nigra obsolet ornatis, pedibus intermed. et post. oreque brunneo-testaceis, pedibus ant. antennisque obscurioribus. Long. corp. 2 lin.

Caput oblonge quadratum, rugosum, costis 5 magis minusve interruptis ad marginem anteriorem in dentes 4 productis munitum. Palpi art. ultimo basi intus incrassato. Antennæ art. 2-3 subæqualibus. Thorax subquadratus leviter rotundatus. Elytra striata in striis profunde punctata.

Ubi præcedentes specimen singulum legi.

As distinguished as the preceding two species. The palpi and the mentum appear to me of a somewhat extraordinary

form. The last joint of the former is considerably and more inflated at the base than in any other Ceylon species that has hitherto come under my notice, whilst the others are of a very curved appearance in both the maxillary and labial palpi. The insect is however, easily distinguished by its general facies, which is rather like that of a Dyschirius, from which genus, however, the mentum alone is sufficient to separate it. I may as well remark here, that, although the Island is well supplied with Scarites and Clivinas, I have hitherto not discovered a single Dyschirius, a genus so well represented in Europe. Of the three Clivinas just described, single specimens only have been in my possession for a considerable time. There are three or four more species met with about Colombo, but these being of common occurrence, I abstain from describing them here, as they may possibly be amongst those described by Putzeys or others from the Indian continent.

7. ŒDICHIRUS *alatus*. N.

Œ. alatus, setosus, nitidus, rufo-testaceus, thorace dilutiore, capite, elytris abdominisque segmentis 3 ultimis nigris; elytris apice 2-maculatis, maculis rufo-testaceis; pedibus flavis, femoribus apice tibiisque basi nigrescentibus; antennis palpisque maxill. basi obscuris, apice testaceis, reliquis oris partibus rufo-piceis. Long. corp. $3\frac{1}{6}$ lin.

Œ. pæderino Er. simillimus, præter colorum distributionem differt tamen *alis*, elytrorum antennarumque articuli ultimi sculptura. Antennæ art. ultimo penultimo aequali nisi paulo minore, apice fortiter *truncato* leviterque excavato. Thorax Œ. pæderini, dorso punctis biseriatim impressus, serie interna vel centrali elliptica punctis minoribus magis inter se approximatis, externa vel submarginali punctis magnis distantibus. Elytra oblonge subquadrata, infra medium rotundata, thorace *longiora* et duplo fere ampliora (utrumque elytron thoracis fere magnitudine), basi parte thoracis adjacente *duplo*-, infra medium illius latitudine antica plus tertia parte latiora. Os, pedes et abdomen Œ. pæderini.

Pæderorum more victitare videtur; in eorum societate in lacus Colombensis ripis infrequentissime legi; illis minus gracilis atque minus agilis.

I have not had an opportunity of examining specimens of either of the three Œdichiri hitherto described. However, I have before me Erichson's figure and description of the Sicilian Œ. pæderinus, with which I find my species strongly to agree. It differs, however, from the former materially in the following three points, viz. the wings, the sculpture of the wing-covers, and the last antennal joint. The fact that this species has wings, would render an alteration in Erichson's diagnosis of the genus necessary, it being characterized therein as apterous. The elytra are not so much contracted and rounded at the base, and, being longer than the thorax, have therefore a more oblong, subquadratic appearance. As in the above typical species, they are, however, rounded at the sides and broadset a little below the middle. They are about twice as broad at the base as the adjoining part of the thorax; and in their broadest part rather more than a third broader than the thorax in its. The third point, in which the two species differ, is the last joint of the antennæ, which, in this case, is strongly truncated at the tip and slightly excavated. They are further distinguished by the distribution of the colours, my species being of a dark yellowish red, thorax lighter, head, elytra and three last abdominal segments black, elytra with two reddish spots at the apex, legs yellowish, at the apex of the femora and base of the tibiæ blackish, the mouth is brown, the maxill. palpi yellowish with the three first joints dark at the base, the antennæ have the six basal joints dark excepting at the apex, where they, as well as the five remaining ones, are yellowish. In all other points I find the insect to agree entirely with the typical Œ. pæderinus: the palpi, legs, and anal segment of abdomen are of the same structure, the hairy vestiture is exactly the same in the different parts of the body of my species as it is in the corresponding ones of Erichson's.

---

## No. II.

### I. ANCHISTA, *n. g.* N. (FAM. CARABIDÆ, trib. LEBIIDÆ.)

Corpus depressum, ovatum. Caput magnum, oculis mediocribus, semiglobosis, prominulis. Mentum dente magno obtuso, lobis parum breviore, his extus rotundatis, apice acuminatis. Palpi robusti, maxillares art. ultimo magno ovato, apice obtuso, labiales art. ultimo valde securiformi. Ligula cornea apice obtuse acuminata, labri marginem anteriorem attingens. (Paraglossæ mihi adhuc non dissectæ.) Labrum transversim quadratum. Mandibulæ simplices apice arcuatæ et acuminatæ. Antennæ robustæ thoracis basin attingentes, art. 1o mediocri, 2o brevi, 3o quarto paulo longiore, 4-10 subæqualibus, 11o penultimo parum longiore. Thorax longitudine latior, angulis anticis rotundatis, medio obsolete angulatus, basi angustatus, quadratus. Elytra apice quadrate truncata. Pedes robusti tarsis art. 4o profunde bilobo, unguibus fortiter pectinatis.

### 8. ANCHISTA *modesta.* N.

A brunneo-testacea, elytris (maculis 2 obsoletis subhumeralibus exceptis) obscurioribus, oculis nigris, abdomine piceo. Long. corp. 4 lin.

Caput fronte medio leviter uniimpressa. Thorax profunde longitudinaliter canaliculatus, lateribus fortiter depressus. Elytra in regione media depressa apicem versus parum dilatata, striato-punctata, ad striam 2m punctis 2 majoribus subapicalibus, cum thorace marginata.

Specimen singulum m. prope Colombo nocte ad lumen cepi.

The characteristics of this new genus, are those of the g. Calleida excepting the ligula which in this case is obtusely acuminated, the last joint of the maxill. palpi which is obtuse at the apex, and the thorax, which is not as in Calleida longer than broad, but the reverse. From Cymindis it would differ principally in the deeply bilobed fourth tarsal joint, and in some other minor points, but it is difficult to say what the true characteristics of this genus are, if even Lacordaire uses the particle "ou" not less than five times in the diagnosis he gives of it in his g. d. Col. It would also appear to be allied to Plochionus, differing from this g., however, in the obtuse extremity of the terminal joint of the maxill.

palpi, and the deeply bilobed fourth tarsal joint. However, if Lacordaire's diagonses are exact, I feel justified in separating Anchista from all these genera. The name "Anchista" has reference to the affinity of the insect to the two genera just mentioned, whilst the specific name "modesta," refers to its inconspicuous colours. Amongst its peculiarities weight ought to be laid upon the plumpness of the palpi, in fact all other parts of the mouth and even the whole head, which was very striking to me.

Like many of my best Carabidæ, I found this insect at night on the table whither it had been attracted by the light. The anterior tarsi are dilated and furnished with hairy brushes below, longest at the apex of the lobes of the fourth joint.

## II. ELLIOTIA. *n. g.* N. (FAM. CARABIDÆ, trib. LEBIIDÆ.)

Corpus subconvexum, ovatum. Caput mediocre, oculis maximis. Mentum leviter transversim emarginatum, edentatum, lobis acuminatis. Ligula submembranacea apice truncata, paraglossis connatis marginem anteriorem parum superantibus, obtusis. Palpi elongati, art. ultimo elliptico, acuminato. Labrum magnum transversum, integrum, mandibulas fere obtegens. Mandibulæ validæ, edentatæ. Antennæ robustæ filiformes, humeros superantes, art. 1° mediocri, 2° brevi, 3° quinti prope longitudine, 4° præcedente breviore, 2-4 obconicis, 5-10 æqualibus, cylindricis, 11° præcedente tertia parte longiore, 4-11 pilosis. Thorax parvus, capite minor, transversus, longitudine duplo latior; antice leviter emarginatus, lateribus elevato-marginatus, ante medium lateribus rotundatus, medio fortiter angulatus, infra medium valde abrupteque angustatus, basi truncatus, subtus cylindricus. Scutellum leviter excavatum. Elytra ovata, marginata, apice sat fortiter truncata. Pedes omnes subæquales, simplices, tenues, tarsis cylindricis art. 3-4 magis minusve trigonis, unguibus simplicibus. Prosternum carinatum.

In honorem Dom. Hon. Walteri Ellioti (Maderaspatani), naturalistæ diligentissimi, meritissimi, nomen imposui.

### 9. ELLIOTIA *pallipes.* N.

E. supra nigra, nitida, thorace scutelloque rufo-testaceis, labro elytrorumque limbo atque sutura brunneo-testaceis; subtus piceus, pectore

rufo-testaceo, pedibus albidis, his geniculis oreque (palpis obscurioribus exceptis) testaceis. Long. corp. 2¼ lin.

Caput ad antennarum insertionem et inter oculos utrinque profunde impressum. Thorax basi rugosus, ante medium utrinque uni-impressus, linea media longitudinali divisus. Elytra punctato-striata, infra humeros leviter impressa.

In ripis lacus Colombensis sub veget. putrescent. mens. Jul. non infrequenter legi. Agilis est et avolare semper expeditus.

A pretty and very interesting little insect, about whose systematic position I am not quite satisfied, however I provisionally place it towards the end of the true Lebiidæ. I find it most to agree with the descriptions of the g. Pentagonica S. G. and Rhombodera R. with neither of which, however, it is identical. The head is distinguished by the large and prominent eyes, and four deep impressions, two larger ones at the root of the antennæ, two smaller ones between the eyes, also by a very distinct neck which connects it with the thorax; the labrum is large, transverse and entire, with the angles rounded off and the base narrowed; the mentum is but slightly transversely emarginated, edentate; the ligula is truncated at the tip, the paraglossæ adhere to it, reach a little beyond it, and are obtuse at the apex; the palpi are rather long with the last joint elliptic, acuminate; the antennæ are strong, filiform, and reach beyond the shoulders, joints 5-10 are of equal length and cylindric, 4-11 are pilose. The most remarkable part of the insect is, however, the thorax, which is of a subrhomboidal shape, transverse, smaller than the head, as broad again as long, it has two strong lateral angles at the middle, each furnished with a strong bristle, the anterior part has the sides rounded, the posterior abruptly obliquely contracted, at the base it is cylindric. As a specific distinction of the thorax, I mention, moreover, that in the present species it is impressed with two deep punctures before the middle and that it is rugose at the case. The abdomen is slightly

peduncled. The scutellum is slightly excavated. The elytra are oval, rather convex and impressed with rows of punctures. The legs are simple and weak, apparently equal in both sexes. The anterior tarsi are a little stouter than the rest, but not dilated nor furnished with any additional clothing below, the anterior tibiæ are deeply notched. As to the colour: the head and wing covers are black, the latter with the suture and margin of a light brown and highly polished, the thorax is reddish, and the legs are whitish. The insect is very agile, and ever ready to take to its wings. It is of quite a peculiar appearance, imparted to it by its large eyes, small curiously shaped thorax and rather plump elytra and abdomen. I may further mention, that I have observed the fourth joint of the maxillary palpi to collapse when the specimens become quite dry, so as to give them a different, spoon-like appearance, apt to mislead any one who has not examined fresh specimens.

10. TRICHOPTERYX *cursitans*. N.

T. ovata, subconvexa, pubescens, supra obscure æneа, elytris æneo-brunneis, subtus picea, pedibus oreque testaceis, antennis art. 3-11 nigrescentibus. Long. corp. 2/5 lin.

Antennarum clava art. 2 primis ovatis, ultimo conico, acuminato. Thorax amplissimus, elytris tertia parte minor, convexus, angulis acutis, basi humeros amplectens, apice angustatus. Elytra subdepressa, subquadrata, apicem versus parum angustata, truncata, abdomine multo breviora. Tibiæ medio incrassatæ. Coxæ posticæ maxime dilatatæ. Mesosternum carinatum.

Sub veget. putrescent. exsiccescentibus in prov. occid. copiosa.

A rather large species, commonly met with in this part of the Island, under rotting vegetable substances somewhat dried up. It is very agile and ready to take to its wings, which are of the beautiful typical construction, about twice the length of the body, and in dead specimens frequently produced

behind. These insects vary a little as to shape, some being more narrowed behind than others, and also as to the exact number of the abdominal segments left uncovered by the elytra, generally three or four. The head is large, but exhibits nothing abnormal or extraordinary; the thorax is very large, emarginated in front and behind, with the angles acute, the basal ones enveloping the shoulders; the wing-covers are subquadratic, with the angles rounded off and a little narrowed behind; the legs have the tibiæ incrassated in the middle, and the posterior coxæ very much dilated and distant from each other; in all other respects they are typical. The shape of the body is that of an egg, broadest at the shoulders, gently narrowed towards the apex of the abdomen, and rounded off towards the head.

11. TRICHOPTERYX *immatura*. N.

T. præcedenti similis, differt tamen colore supra æneo-testacea, subtus testacea, antennarum art. 3-11 nigrescentibus; differt etiam corpore robustiore, magis quadrato, capite paulo majore, thorace minus convexo, parum ampliore, elytris abdomen totum vel fere totum obtegentiis. Pedes, antennæ etc. omnino præcedentis. Long. corp. $\frac{1}{3}$ lin.

In præcedentis societate specimina nonnulla legi.

Of somewhat the appearance of an immature individual of the former, but sufficiently distinct to be formed into a new species. The insect is altogether of a different appearance, imparted to it by the greater general plumpness of the body, the larger head, the less convex, but at the same time, possibly still ampler thorax, the altogether more quadratic shape, etc. The remark regarding the exact number of abdominal segments, left uncovered by the elytra, applies to this and all other species as well. The present one has generally the last two segments uncovered.

12. TRICHOPTERYX *invisibilis*. N.

T. ovata, subdepressa, subparallela, pilosa, supra obscure ænea, subtus

picea, pedibus, abdomine, antennis oreque testaceis. Long. corp. vix 1/5 lin.

Thorax amplus, elytris sesqui minor, convexus, angulis posticis humeros vix superantibus. Elytra oblonge quadrata, angulis rotundatis, subdepressa, truncata, abdomen totum vel fere totum obtegentia. Coxæ posticæ approximatæ. Tarsi typicis minus elongati, art. 3° præcedentibus haud multo longiore.

Cum T. cursitante vietitat; frequenter legi.

A very pretty and very distinguished species. Its most striking peculiarity consists in the posterior coxæ, which are as little distant from each other as those of the anterior legs, and almost touch each other, and also in the shortness of the tarsi. The head with the antennæ, the mesosternum, the tibiæ, which are incrassated in the middle, the posterior coxæ, with regard to the enlargement, are quite typical. However, the thorax and elytra differ again from those of T. cursitans, (which in every respect may be looked upon as the typical representative of the family in Ceylon, and which is here referred to as such) the former by the shortness of the posterior angles, which can hardly be said to envelope the shoulders, the elytra by being less or not at all narrowed behind, giving an oblong rather than an oval shape to the insect. Although in length only about one half shorter, it is in bulk certainly one fourth smaller than T. cursitans, and, although probably the smallest Ceylon beetle, it is distinguished at first sight.

### 13. Ptilium *subquadratum*. N.

P. subquadratum, subconvexum, pilosum, obscure æneo-testaceum, thorace dilutiore. Long. corp $\frac{1}{4}$ lin.

Caput mediocre. Antennarum clava art. 1° inverte conico, 2° subcylindrico, ultimo elongato-ovato. Thorax convexus, angulis basalibus humeros fortissime amplectentibus, apicem versus valde rotundatus, apice leviter sinuatus. Elytra quadrata, abdomen non totum obtegentia. Scutellum parvum. Pedes robusti tibiis apicem versus incrassatis, tarsis art. 3° primi secundique longitudine, his subbilobis subtus penicillatis, coxis posticis simplicibus distantibus. Mesosternum non carinatum.

Ubi præcedentes sed infrequenter occurrit.

The g. Ptilium is the repository for all the anomalies of the family, its characteristics therefore are very vague; but if the absence of the mesosternal carina and the simplicity of the posterior coxæ, are the determining features amongst them, the present species, in spite of a variety of anomalies it exhibits in other respects, belongs to it. The head is of middling size; the antennæ robust with the first joint of the club of the shape of an inverted cone, the second rather cylindrical, narrowed at the base, and the last elongate, ovate. The thorax is of very different structure from that of the foregoing species of the family, the basal angles being unusually far produced beyond the shoulders, towards the head it is strongly and rapidly rounded off, being thus altogether of a semicircular shape, at the appex it is merely slightly sinuated, and the head is inserted rather below than in this sinuosity, the whole thorax moreover is very convex, whilst the elytra are depressed. The wings vary from the typical form by being fringed with short simple cilia, instead of those long feathery appendages; they are moreover without a distinct peduncle, but still folded in the manner characteristic of the family. The legs are stout with the tibiæ thickest at the tip, the third tarsal joint is of the length of the preceding two, the latter are somewhat bilobed and hairy below. The posterior coxæ are simple and distant. The mesosternum without a carina. The whole shape of the insect is quadratic rather than otherwise.

14. PTENIDIUM *macrocephalum*. N.

P. ellipticum, subconvexum, nitidum, sparsim pilosum, supra piceo-æneum, subtus piceum pebibus oreque testaceis. Long. corp. $\frac{1}{4}$ lin.

Caput maximum. Antennarum clava elongata articulis ellipticis. Thorax subquadratus antice posticeque angustatus, basi punctis 4 magnis profunde impressus. Elytra ovata, medium versus leviter inflata, apice obtuse acuminata, abdomine longiora et ampliora, punctulis lineis dispo-

sitis obsoletissimis impressa. Alæ corpore plus duplo longiores. Tibiæ fortiores spinulosæ. Tarsi breviores. Prosternum carinatum.

In præcedentium societate frequenter lectum.

This is perhaps the prettiest of the five species of the family just described, and at first sight recognised by the shape of its body and the polished back. The head is very large. The thorax is narrowed in front and behind, at the latter place impressed with four deep not to be overlooked punctures. The wing-covers are oval, a little inflated about the middle, rounded at the apex and longer and wider than the abdomen. The prosternum is carinated.

It affords me much gratification to be enabled to publish representatives of three genera of this highly interesting and probably very extensive and widely distributed family of pygmies, the South Asiatic representatives of which have hitherto been entirely unknown. I have no doubt that even this Island is the abode of a great many more species.

15. STENUS *barbatus*. N.

S. elongatus, æneo-niger, nitidus, punctatus, sparsim pubescens, pedibus palpisque albidis, ore coxisque testaceis, antennis brunnescentibus. Long. corp. 2½ lin.

Caput thorace tertia parte latius, fronte costis 3 abbreviatis, antice albido-pubescens. Antennæ art. 3º sequentium 2 fere longitudine, 3 ultimis elongatis, ellipticis. Palpi max. elongati apice densius pubescentes. Thorax cylindricus medio leviter incrassatus, basi subquadratus. Elytra thorace paulo longiora, sed fere duplo latiora, convexa, ovata. Abdomen immarginatum. Pedes elongati tenues, tibiis apice tarsisque fortiter setosis, his art. 4º profunde bilobo.

In lacus Colomb. ripis specimina nonulla legi.

This as well as the following species belongs to Erichson's division II. B. of the g., both having the abdomen immarginate and the 4th tarsal joint bilobed. Every thing about this species is elongated. The head is about one third broader than the thorax, the forehead is slightly excavated with two

elevated ridges running from the root of the antennæ a short distance upwards, a third runs from the crown of the head down towards the centre of the two former, but all three reach only about the middle of the head. The part below the antennæ is covered with white hair. The antennæ have the 3rd joint much elongated and the terminal club composed of elliptic joints. The thorax is rather slender, incrassated at the middle, gradually narrowed in front but nearly quadratic behind. The elytra are longer than the thorax, about double its breadth and oval, being slightly narrowed at the shoulders and the apex. The legs are long and slender, hairy at the apex of the tibiæ and the tarsi, the latter very much so on the inner side. The insect is of a metallic black color highly polished; the legs, palpi and the first two antennal joints are whitish, the tibiæ and the apex of the palpi being, however rather darker, joints 3-11 of the antennæ are brownish, the coxæ and the mouth are yellowish, the tarsi have a brown spot at the apex of the first 3 joints, the claws are black. The insect is punctured all over, but the abdomen, the apical segments of which are indeed nearly smooth, less so than the rest of the body, and sparingly covered with small white hairs.

16. STENUS. *lacertoides. N.*

S. robustus, nigro-æneus, dense profundeque punctatus, subtus sparsissime pubescens, pedibus palpisque testaceis, femoribus apice nigrescentibus, antennis oreque castaneis. Long. corp. 1½ lin.

Caput thorace quarta parte latius, fronte 2-costata. Antennæ robustæ art. 3° quarto paulo longiore, 9-10 globosis, 11° conico. Thorax cylindricus, medio fortius incrassatus, latitudine quarta parte longior, margine anteriore elevato, basi subquadratus. Elytra thorace longiora, convexa, humeris prominentibus. Abdomen immarginatum. Tarsi art. 4° profunde bilobo.

In prov. occid. stagnorum ripis rarius occurrit.

About this species every thing is robust. It is well distinguished by the rounded club-joints of the antennæ, the elevated

anterior margin of the thorax, the prominent shoulders and its general shortness and plumpness. The forehead is rather more depressed or excavated than in the former, the two antennal ridges are shorter, the vertical one is altogether obsolete. The palpi are robust. The 3rd antennal joint is about one third longer than the 4th. The thorax is shorter and plumper than in the former. The elytra are less oval, having the shoulders more prominent and only the apex rounded off or narrowed. The legs are similar to those of the former, but more robust, less hairy and have the tarsi more cylindric. The insect is of a blackish metal color, the legs and palpi, are yellowish, the tibiæ, however, the apex of the palpi and also joints 1-2 of the antennæ rather darker, the femora are blackish towards the end, the mouth and joints 3-11 of the antennæ are chestnut and the coxæ pitch-color. The animal is densely and deeply punctured all over, very sparingly covered with small greyish hairs, nearly obsolete on the back but more distinct below. It is less highly polished than the former.

17. ANTHICUS *quisquiliarius*. N.

(A. *formicarius*, of the first edition. I have changed the name, as I have since perceived that it has been already used by Laferté.)

A. castaneus, capite, abdomine elytrisque piceis, his fascia media transversali interrupta maculisque 6 humeralibus niveis, parce pilosus. Long. corp. $1\frac{2}{3}$ lin.

Caput globosum supra subtusque profunde punctatum, oculis parvis. Thorax nodoso-pyriformis, infra medium constrictus, parte anteriore crassiore lin. long. med. profunde divisa, subcordiformi. Elytra elliptica.

Sub veget. putrescent. victitat, prope Colombo rarius legi.

This insect looks uncommonly like an ant. It is easily distinguished from all other species of the Island partly by this resemblance, partly by the sculpture of the thorax and the white fascia across the elytra. The antennæ are robust,

thickened towards the tip, the 3 last joints forming a club. The legs have the femora very much incrassated, the tibiæ at the apex bicalcarate, and the tarsi, especially of the anterior pair, very hairy below, the 4th joint appears to be slightly cordiform. The white marks of the shoulders and the fascia across the wing-covers are composed of white hairs, the former are rather an interrupted row of these than true maculæ, the fascia consists of two halves, one in either elytron, reaching neither the external margin nor the suture. The insect is of slow motion.

18. ANTHICUS *insulanus*. N.

A. testaceus, abdomine obscuriore, capite thoraceque rufo-testaceis, elytris fasciis 2 nigris, parce pilosus. Long. corp. $1\frac{1}{4}$-$1\frac{1}{2}$ lin.

Caput globosum oculis mediocribus. Thorax pyriformis, cum capite supra punctata. Elytra ovata. Tarsi art. 4° bilobo.

Prope Negombo in pratis sat copiosus.

In some of the specimens before me the anterior femora are furnished with a strong thorn inside having at the same time the tibiæ of the same pair of legs slightly emarginated inside near the apex.

19. MELIGETHES *orientalis*. N.

M. ovatus, subconvexus, pilosus, supra nigro-æneus, subtus piceus, pedibus, antennis palpisque maxill. dilutrioribus, tarsis palpisque labial. brunneo-aureis. Long corp. 1-$1\frac{1}{2}$ lin.

Mentum transversum planum, punctatum, lobis apice depressis excavatis, glabris, obtusis. Palpi lab. art. ultimo inflato, ovato; maxill. art. ultimo apice angustato levissime truncato. Mandibulæ uni dentatæ. Thorax amplus angulis acutis, antice emarginatus, postice pluries sinuatus, subtus punctatus. Elytra ovato-quadrata, angulis 4 apicalibus rotundatis, pygidium haud obtegentia. Pedes validi, femoribus tibiisque incrassatis; anteriores tibiis apice intus unispinosis, tarsis art. 1-3 fortiter dilatatis, 1-2 subæqualibus transversis, profunde reniformibus, 3° minore, cordato, 4° minimo, subcylindrico; intermed. et post

tibiis extus spinulosis, tarsis anterioribus similibus sed art. 1-3 minus dilatatis, cordiformibus. Prosternum marginatum, punctatum, obtuse, acuminatum. Mesosternum antice carinatum.

Variat magnitudine et colore æneo-brunnea.

Prope Colombo in floribus per occasionem frequentissime legi.

Of the usual shape and color, but larger than usual, varying, however, in this respect, some individuals being fully one third smaller than others. These small individuals, which occur in the proportion of about 2 to 20, are moreover nearly always of a brownish metal color instead of a blackish green. I have been unable to discover any other distinctions. This difference in size is no criterion as to the sex. The insect appears of local occurrence or attached to certain plants, which is nearly the same. I find them in abundance in the blossoms of Convolvulaceous and Apocynaceous plants in my garden, which is situated in the west bank of the lake. The species appears to differ from the typical Meligethes in the following points: the structure of the mentum, which I have sufficiently described above, the last joint of the lab. palpi, which in this case is not truncated, and the first of the antennæ which is externally incrassated as in Epuræa. The antennæ are otherwise robust, the club is firm and hairy. The thorax is very ample, thinly ciliated along the upper part of the anterior margin, rather strongly below. The prosternum is largely developed, marginated, punctured and obtusely acuminated, overlapping the anterior part of the mesosternum which (the anterior part) is cylindric and carinated. Joints 1-3 of the tarsi are strongly penicillated below, the penicilla being composed of glanduliferous hairs of a fine golden color.

20. Georyssus *gemma*. N.

G. pygmæi statura et magnitudine, supra purpureo æneus, iridescens, subtus piceus; *alatus*. Thorax subsemiorbicularis infra apicem constrict-

us, sulco med. long. divisus, lateribus, basi apiceque excavatus, impressionibus 3 majoribus dorsalibus, 2 minoribus lateralibus. Elytra fortissime costata, costis obtuse dentatis, in interstitiis transversim punctato-impressa, ad humeros profunde excavata, infra medium leviter sinuata. Tibiæ extus spinulosæ, intus sparsim ciliatæ.

Prope Negombo in ripis Mahæ-Oyæ fluvii non infrequenter et per occasionem nocte ad lumen cepi.

Lacordaire and others characterize the g. Georyssus as having the elytra soldered together and being destitute of wings. *In the present species, however, the elytra are unconnected and cover wings proportionately larger than in any other beetle I can at present think of.* They are elongated and comparatively narrow, resembling in shape very much those of a Libellula, have a few veins at the base and are ciliated at the margin. I have moreover occasionally taken this insect *flying* about the light at night. The sculpture of the thorax is complicated and difficult to describe, however, the leading features in it are these: a subapical sinuosity on either side; a longitudinal furrow; excavated sides, base and apex; 3 larger dorsal depressions (1 central, 2 obliquely basal) and 2 smaller lateral ones at the subapical sinuosities—a short elevated ridge at the centre of the base separating the 2 basal impressions and being itself divided by the longitudinal furrow; 2 elevations separating the anterior part of the basal impressions from that of the central one (at the middle these 3 depressions are connected); 2 small rugosities near the anterior margin, one on either side of the longitudinal furrow.

The sculpture of the elytra is less complicated: they have a deep cavity at the shoulder, a large, but not deep, sinuosity below the middle, and are obtusely acuminated. The costæ of the back are 11 in number, the suture lying in the central one. The half of this central costa and the exterior margin form an elevated border round either elytron. The first and second on either side run towards the apex but come to a stop

(very abrupt in most, but less so in some specimens,) before reaching it, the third after having been interrupted near its base by the subhumeral cavity, runs on but does not reach as far as the former, the 4th does not leave the region of the shoulder, the last on either side is very prominent at the base but soon forms an abrupt declivity and runs on as a low ridge to below the middle. The back of all these costæ is obtusely dentated. The interstices are marked with large, shallow, transverse impressions. The head of the insect is rather large and even. The mandibles are furnished with an obtuse sub-apical tooth, the 2 lower thirds are ciliated. The maxillæ have the apex of the outer lobe externally enlarged, rounded off and furnished with 3 strong teeth replaced by cilia on the inside, the inner lobe is conic and similarly provided with teeth and cilia, however, much thinner and finer. The maxill. palpi are robust, the last joint is inflated at the base. The antennal club is hairy, dark (whilst the remaining joints are yellowish), conic and somewhat securiform, the 6th joint being inserted on one side of the 7th. The legs are robust, the tibiæ slightly curved, obliquely truncated at the end, furnished with spines along the outside and with distant cilia along the inner.

21. HYDROCHUS *lacustris*. N.

H. elongatus, subdepressus, supra metallicus, iridescens, subtus piceus pedibus, antennis, palpis elytrorumque margine magis minusve brunneis, mento cyaneo. Long. corp. 1-1½ lin.

Palpi maxill. robusti art. ultimo elliptico leviter inflato. Mandibulæ apice bifidæ. Antennarum clava dense pilosa. Thorax oblonge quadratus basin versus angustatus, basi medio productus, cum capite profunde punctata. Elytra ad humeros oblique truncata, apicem versus sat fortiter angustata, profunde striato punctata. Tibiæ extus spinulosæ.

Specimina nonnulla in lacu Colomb. legi.

The head is robust, broader than the thorax, the eyes large and prominent. The femora, the last joint of the maxill. palpi, the mandibles, and the tarsal joints are dark towards the apex.

22. HYDROUS *rufiventris.* N.

H. ovatus, convexus, supra oleagino-niger, subtus obscure ferrugineus, pedibus dilute piceis, labro æneo, reliquis oris partibus cum clypeo testaceis. Long. corp. 9. lin.

Palpi maxill. articulis apicem versus abruptius incrassatis, art. 3o quarto sesqui longiore. Antennæ art. 7-8 fortiter perfoliatis, ultimo acuminato. Caput antice utrinque punctulorum serie subsemicirculari et ad oculorum marginem interiorem impressum. Thorax punctulorum seriebus 4 lateralibus, 2 subapicalibus obliquis abbreviatis signatus. Elytra subtiliter striato-punctata. Tarsi omnes unguibus basi fortiter uni-dentatis. Carina prosternalis cultriformis.

Specimen singulum f. nocte ad lumen cepi.

As far as my resources allow me to ascertain a very anomalous species, having the perfoliated antennæ and toothed claws of a Hydrophilus and the cultriform prosternal carina and the elytra of a Hydrous, I have placed it in the latter g. on account of the sharp edge of the prosternal carina, in which the great distinguishing character of this g. seems to lie, the same being deeply grooved in Hydrophilus. The insect attracts at once attention by the reddish color of its abdomen. It is of a blackish olive color on the back having however the clypeus and the anterior margin of the labrum of a yellowish brown, the latter being otherwise of rather a metallic color. The remaining parts of the mouth are more or less yellowish. Joints 1-6 of the antennæ are yellowish too with the exception of the 2nd which is dark, joints 7-9 are blackish and pubescent. The legs are of a light pitch color. The lower part of the head is impressed with 2 rather semicircular series of punctures, similar punctures occurring along the internal margin of the eyes. The thorax is marked with 6 series of them and on the elytra they are arranged in lines. The sternal carina is well developed, the prosternal part has a sharp edge, whilst the mesosternal one is obtuse on the back and the metasternal part depressed and slightly grooved.

23. HYDROUS *inconspicuus. N.*

H. præcedente minus convexus, supra oleagino-niger, subus rufo-piceus, ore testaceo. Long. corp. 4½ lin.

Palpi maxill. art. 2o et 4o subcylindricis, 3o apicem versus sensim incrassato, sequente tertia parte longiore. Antennæ art. 7-8 sub-globosis, 9o magno, ovato. Caput, thorax et elytra ut in præcedente sculpta et signata.

In lacu Colomb. mens. Jun. non infrequenter cepi.

This is in every respect a normal species. The prosternal carina has a sharp edge, the claws are simple, the antennal club is composed of rounded joints, the elytra are of the typical structure, etc. In the latter respect as well as with regard to the various series of punctures upon head, thorax and elytra, it resembles the former, the punctures of the elytra are, however, less distinct. Joints 1-6 of the antennæ are yellowish, the club being dark and finely pubescent. The maxill. palpi have joints 2 and 4 subcylindric, but the intermediate one thickened towards the tip.

I have not seldom in the month of June taken the pupæ of this species on the banks of the Colombo lake and hatched them at home. I found them about one inch under ground and often as far as 12 feet from the edge of the water, but still in muddy places. The imago is very active, perhaps more so than any other species of the g.

---

## No. III.

---

*General remarks on the* SCYDMÆNI *described below.*

In the first number of these papers, I have described a winged species of Œdichirus, a g. supposed to be without organs of flight; in the second number I have given publicity to the more important discovery of wings in the single g

which forms the family of the Georyssi, also hitherto supposed to be apterous; at present I am about to announce to some and to confirm to others the existence of these organs in the family of the Scydmænidæ, a fact, although incomplete, of more importance than either of the former, considering the extent of the family and the difference of opinion, which appears to exist on the subject amongst the most eminent Entomological authorities. It is this importance which induces me to enter more fully on the subject.

I am not acquainted with the famous monograph of the family of the Scydmænidæ by Dr. Schaum; however, from the manner in which it is quoted by Lacordaire, in his g. d. Col. I should infer that these two celebrated authors agree in all the vital points. In Lacordaire's diagnosis of the family, these insects are described as having (with the exception of the American g. Brathinus, of which Lacordaire is not quite sure that it belongs to the family) the elytra soldered together and being destitute of wings. Now, it is scarcely credible that on a point so easily ascertained as this, any difference of opinion should exist, still Westwood in his Modern Classification of Insects, in describing the same family, makes statements which imply the contrary. However, Lacordaire's description, being by 15 years more, in fact, the most recent, is, from this reason alone, entitled to be considered before all others; and looking upon it in this light, that is, as the essence of all former observations, I shall, for the present, occupy myself with it alone. According to this description, as mentioned above, the insects which it regards *have the elytra soldered together, and are destitute of wings.* This being the case, I was startled to find that, out of the 13 species described below, 9 or 10 which I examined in this respect, had neither the elytra soldered, nor were they destitute of wings—*on the contrary the elytra were unconnected in the middle, and the wings were nearly double the size of the whole insect and could not pos-*

*sibly be overlooked.* I would willingly suppose that the 100 species of this family contained in European collections, and principally derived from Europe and North America, agreed with Lacordaire's description, and that the Ceylon species were exceptions to the general rule, had not Westwood's observation, alluded to above, corroborated my own, thus rendering me suspicious of some unaccountable mistake or oversight somewhere or other. That this mistake cannot consist in a slip of the pen, or a misprint in the g. des Coléoptères quoted above, is clear from the obvious care which has in every respect been bestowed upon this work, and from the same remarks being repeated in different words. Where then this mistake is, upon what ground it rests—it would, under my circumstances, be useless to attempt to unravel. However, it appears certain to me that some more detailed and positive remarks on the subject cannot be superfluous, and must be new to some entomologists. Placing the fullest confidence, as every one would do without hesitation, in the infallibility of the description of the Belgian author, it was not likely that I should have looked for wings at all in the Scydmænidæ (a family to which I have not, until lately, paid much attention) had I not been struck by seeing the elytra of my S. alatus open, when handling it with a fine painter's brush in a drop of water, it being at the time quite out of the question that the opening could have been effected by pressure. On opening the elytra fully, I had no difficulty in discovering the wings. Rendered extremely curious by this discovery—diametrically opposed to the distinct statement of so great an authority as the one just alluded to—I now examined other species, and all with the same result, most of them opening the elytra without my assistance, in the same manner as S. alatus, and I have not the slightest doubt, that when a sufficient number of specimens will enable me to examine the rest, it will still be with the same result. That these insects use their organs

of flight may be gathered from the following: at a former period, I lived in a house situated in a small eminence and overlooking extensive groves of Cocoanut trees, Cinnamon gardens, Paddy fields, and patches of jungle. Here I collected large numbers of Pselaphidæ, especially Euplectus, in thin, scarcely visible spider webs with which the white walls of the house were covered in certain places—thus forming one large trap for any thing small flying about. That these had been caught here when on the wing, there can be no doubt; but I was much surprised to find with them (what is so common in more congenial localities, here also,) a considerable number of Scydmæni, especially my S. advolans and pubescens, as they were said by the most recent authority to be unable to fly, and the position they then found themselves in, was one they could not well or would not possibly have got into otherwise than by flying. From some reason or other, I am ashamed to say, I did not follow up the matter at the time; but I am now certain on the subject, indeed, to remove all doubt and to settle all disputes, I have just been so fortunate as to take my S. advolans actually on the wing, flying in my garden in the evening at sunset.

Having gone so far, I will (in spite of some slight misgivings of being laughed at for telling an old story with so grave a face) add a few descriptive words about the organs in question: The wings of my Scydmæni are ample, about double the size of the whole insect, oblong, having the margin beautifully ciliated, and, with the exception of a few yellowish veins at the base, without any visible organs of this kind.

In spite of the difference in their shape, etc., I believe the species described below to be all genuine Scydmæni as restricted at present; being, however, unacquainted with the sexual distinctions of these insects (which indeed I believe not to have been satisfactorily pointed out by any one, and to differ in different species), I should not be surprised if one or

two of my species were eventually ascertained to have been separated upon these grounds alone. However, having been very reluctant in the admission of new species, it is just as likely that individuals may hereafter be found united in one which ought to be separated into two species. But I trust that neither may happen. The species were all collected by myself in the immediate neighbourhood of Colombo. I have, however, no doubt that they occur all over the S. W. of the Island, which is of a uniform physical character, and perhaps occupy a still larger portion of it: indeed, I have taken the S. pselaphoides in the hills, at an elevation of 3500 feet, under the bark of trees. None of them are quite common, on the contrary, of nearly half of them I possess, only one or two specimens. My S. femoralis I found under the soft, rotting bark of an Erythrina Indica, S. Ceylanicus and ovatus, I found dead in spiderwebs, S. graminicola, glanduliferus and pyriformis, I have hitherto exclusively taken in the sweeping net on the lawns of my garden about sunset; the other species I have met with indiscriminately in spiderwebs, under rotting vegetable substances, and in the grass.

After this preamble, which I trust may not be deemed quite superfluous, I now enter upon the description of my species, drawing previously attention to the three very natural and very distinct groups which they form, and the characteristics of which will at once be perceptible from the headings given below. With regard to the first group (A. I. spec. 24-28) I may mention that the elongated legs, largely developed posterior trochanters and often distinct posterior coxæ render the motions of the insects belonging to it staggering when walking, which together with their oblong, subdepressed body distinguishes them at a glance. I have subdivided them from the cultriform or gooved mesosternal carina. The second group (A. II. spec. 29-35) is equally well characterized as the former by the more robust, pyriform and subconvex body of the

insects. S. pselaphoides in the former and S. advolans in the present group form connecting links between the two, especially S. pselaphoides, which in general appearance rather belongs to the second, upon closer examination, however is easily ascertained to be an anomalous member of the former. From the rounded or narrowed occiput I have divided the second group into two subdivisions, giving preference to the distinctions to be drawn from this part of the body to those to be derived from the thorax, which from the variety of shapes it assumes would naturally suggest itself for that purpose, but the gradations between the principal forms appear to me too many, too fine, and therefore too indistinct to adopt them. As to the third group (B. spec. 36) the insect which alone forms it amongst those described below, is so different from any of the others that its peculiarities must strike any one at first sight.

*A. Species with a thick neck, abruptly formed and immersed in the thorax.*

*I. Fourth joint of the maxill. palpi not acuminated; head subquadrato-ovate; eyes middling or small, finely granulated, little or not at all prominent; antennæ subapproximate at the base; posterior trochanters elongated, incrassated at the apex; thorax obovate; body elongate, subdepressed.*

*a.) Mesosternal carina slight, simple.*

24. SCYDMÆNUS *alatus*. N.

S. dilute brunneus, pedibus antennisque dilutioribus, tarsis palpisque testaceis; pubescens; Long. corp. ⅔ lin.

Antennæ art. 1° apice bi-acuminato, 3-4 subæqualibus, 5 præcedente majore, 6 longitudine inter 4 et 5, ovato, 7-8 subæqualibus, 9 majore, 7-9 *apice angustatis, tubiformibus*, 10-11 ovatis, clavam formantibus, *vel* art. 9 globoso, 9-11 clavam formantibus. Palpi maxill. art. ultimo minimo apice truncato. Mandibulæ dente bifido munitæ, basi fortiter abrupteque dilatatæ. Thorax foveis basalibus nullis. Pedes elongati.

I include in this species individuals with a 2 and others with a 3-jointed antennal club. The latter are further distinguished by having a slight sinuosity in the rounded outline of the basal angles of the thorax, by having the posterior part of the metathorax and the base of the abdomen sensibly incrassated, and the head rather less quadratic than the former. However, the individuals thus distinguished being in all other respects exactly like those with the 2-jointed club, I cannot help looking upon all these distinctions as sexual ones and uniting the insects in the same species.

The head from the eyes to the neck is of a transverse subquadratic form merging into the oval by the angles being rounded off, the anterior part is narrowed. And this is the typical sculpture of the skull in all the 5 species of this group. The eyes in the present species are middling. The antennæ are rather approximated at the base and inserted in the centre of the front under a ridge which runs across it from eye to eye. The first joint is biacuminated at the apex, the 5th is longer than the adjoining ones, joints 7-9 in the individuals with the 2-jointed and 7-8 in those with the 3-jointed club, are of a peculiar construction, being narrowed at the apex and fitting into each other like the tubes of a spyglass. The club joints are ovate, flat at the base, the last is large and obtusely acuminated. I consider the principal distinguishing character to lie in the remarkable structure of joints 7-9 of the antennæ. The maxill. palpi have joint 2 rather strongly incrassated at the apex, joint 3 obovate, narrowed at the base, joint 4 very minute, truncated at the apex. The mandibles are furnished with a bifid tooth and are strongly and abruptly dilated at the base. The thorax is of an obovate or obcardato-ovate form, being rather strongly rounded off before the middle and gradually narrowed below it; the usual basal impressions are wanting, the posterior margin has two slight sinuosities, the posterior angles are

rounded off or obliquely truncated. Scutellum obsolete. Elytra furnished with a very short elevated ridge at the shoulder. Legs elongated; coxæ large, the 2 posterior ones rather distant from each other; 2 posterior trochanters much elongated, incrassated at the tip; apex of tibiæ subcylindric, but not narrowed, and hairy, especially in the 2nd pair; joints 2-3 of the tarsi of equal size, the first longer, the 4th a little shorter, 2 anterior tarsi slightly contracted, 2nd and 3rd pair more and more elongated. Penultimate segment of abdomen with a strong longitudinal groove on the back.

25. SCYDMÆNUS *femoralis.* N.

S. statura et magnitudine præcedentis; testaceus. Antennæ art. 3-4 subæqualibus, 5 præcedente longiore, 6-8 gradatim minoribus, subglobosis, 7-8 apice fortius oblique truncatis, 9-11 gradatim majoribus, subglobosis, calvam formantibus. Palpi maxill. art. ultimo minimo semigloboso. Thorax magnus obovatus, basi rotundatus, 4 foveolatus. Elytra *apice truncata*, 2-*sinuata.* Pedes *femoribus* 2 *posticis medio constirctis.*

Of the general appearance of the former but of a light yellowish color and well distinguished by the large thorax, truncated elytra and abnormal construction of the 2 posterior femora. Antennæ with joints 7-8 rather strongly obliquely truncated at the apex, 9-11 forming a club, subglobose, flat at the base, the last acuminated and slightly cut away or even excavated on the inside of the apex. Last joint of maxill. palpi semiglobose, these otherwise the same as in the former. Thorax and elytra of S. alatus, the former however, larger, rounded at the posterior margin and with 4 basal impressions, the latter slightly truncated at the apex and with a slight sinuosity in the truncature on either side of the suture. Scutellum very small. Legs with the tibiæ slightly bent at the base, the apex as in the former; tarsi with joints 1-4 gradually decreasing in size, first pair contracted and

furnished with brushes on the inside. The 2 posterior legs inserted rather distant from each other, the basal part of abnormal construction: the trochanters are much elongated and incrassated at the tip whilst the femora are at the place of the juncture rather abruptly narrowed, bent, and slightly compressed, they being at the same time thinner than the adjoining apex of the trochanter the constriction is very striking.

26. Scydmænus *Ceylanicus*. N.

S. alati colore, sed major et magis depressus; long. corp. $\frac{3}{4}$ lin. Caput magnum, robustum, thoracis latitudine. Antennæ basi non approximatæ, art. 3-4 et 5-7 inter se subæqualibus, *arcum formantibus*, 8-10 gradatim majoribus, subglobosis, depressis apice oblique truncatis, 11° magno, conico, 8-11 longius pilosis, calvam, formantibus. Palpi maxill. art. 4° minimo, semigloboso. Thorax ovatus, foveis basalibus nullis. Elytra apice singulatim rotundata. Pedes validi tarsis 2 ant. art. 1° *subtus in spinam sat fortem producto.*

An anomalous species, especially with regard to the antennæ which are much less approximated at the base than those of the rest of the species belonging to this group, and with regard to the two posterior coxæ which on the contrary are more approximated than in any of the species just referred to. The insect is of the light brown color of the two former, but larger and more depressed. The head is strikingly large and heavy, of the width of the thorax, in its hind part, which is strongly transverse, the oval form is prevailing over that of the square. Eyes small. Antennæ inserted under two strong protuberances rather than under a ridge, their club 4 jointed, joints 3-7 forming an inwards bent section of a circle, joints 8-10 strongly compressed, obliquely truncated (subperfoliated) 11 large, conic. The 3rd joint of the maxill. palpi is of an oblongo-ovato shape, the external basal angle is prolonged into a small peduncle inserted in the apex of the 2nd joint,

the 4th joint, about the semiglobose shape of which I am not quite satisfied, appears to be obliquely inserted in the tip of the preceding. Thorax oval, of a similar shape to that of the former, anterior margin slightly emarginated. Scutellum obsolete. Elytra with the traces of a humeral costa, separately rounded off at the apex. Legs strong, 2 posterior coxæ not more distant from each other than the 4 anterior ones; tibiæ elongated, bent at the base and apex, at the latter place slightly narrowed, subcylindric and hairy; tarsi with joints 1-4 subequal, in the first pair strongly contracted, joint 1 of this pair produced in a spine on the inside.

*b.) Mesosternal carina middling, grooved.*

27. SCYDMÆNUS *intermedius*. N.

S. alati statura sed major et robustior, colore obscuriore; long. corp. $\frac{3}{4}$ lin.

Antennæ art. 1° apice bi-acuminato, 2 et 5, 3 et 4, 7 et 8 inter se subæqualibus, 6 quarto paulo minore, obovato, 7-8 subglobosis apice oblique truncatis, 9-11 gradatim majoribus, obovatis, clavam formantibus, 11 acuminato. Palpi maxill. art. 3° obovato, 4° minimo semigloboso. Thorax subrotundatus, basi 4-foveolatus. Elytra apice singulatim rotundata. Mesosternum sat fortiter carinatum, *carina dorso deplanata, canaliculata, apice acuminata.*

This species stands in the middle between S. alatus and pselaphoides. To the former it is allied by its general appearance rather than by anything else, differing from it very much in the structure of the antennæ and the mesosternal carina. To the latter on the contrary it is allied by similarity in the structure of the said carina, differing, however, from it in general appearance. The color is that of S. alatus, but a shade or two darker, the insect being at the same time larger and altogether more robust. The eyes are small. Antennal club 3-jointed, the joints forming it gradually increasing in

size, obovate, flat at the base, the last acuminated. Scutellum obsolete. Elytra with 2 slight basal impressions, the trace of a humeral costa, separately rounded off at the apex. Legs elongated as usual; 2 posterior coxæ distant, tibiæ straight, subcylindric, but not narrowed at the apex, the 4 anterior ones hairy; tarsi with joints 1-4 almost inperceptibly decreasing in size or perhaps 2-3 equal, the anterior ones slightly contracted, these and the intermediate ones hairy on the inside. Mesosternal carina middling, flat on the back with a shallow but very distinct longitudinal groove or excavation, anterior part projecting, acuminated.

28. SCYDMÆNUS *pselaphoides*. N.

S. subpyriformi-ovatus, subconvexus, magis minusve brunneus, pedibus antennisque subtestaceis, femoribus apice nigrescentibus, tarsis palpisque testaceis; flavo-pubescens; long. 1-1¼ lin.

Antennæ art. 1° mediocri, apice biacuminato, 2-4 sensim minoribus, 5 et 2, 6 et 3, 7 et 10 inter se subæqualibus, 9-11 clavam formantibus, 6-11 basi transversim, 6-8 apice oblique truncatis, 7-8 compressis. 9-11 obovatis. Mandibulæ dente bifido munitæ, basi dilatatæ et ciliatæ. Palpi maxill. art. 3° inverte conico, 4° minimo apice truncato. Thorax obovatus, latitudine quarta parte longiore, basi 4 foveolatus. Elytra apice singulatim rotundata. Mesosternum præcedentis.

An anomalous species with regard to its general appearance which differs considerably from that of the rest of the group, and makes it, as I have remarked above, the connecting link between this and the following group. This is the largest species I have hitherto met with. The system of coloration is the usual one: more or less deep brown, legs and antennæ lighter, tarsi and palpi quite so. Eyes middling. Antennæ with a 3-jointed club, the joints subglobose, flat on the base, the last large, conic, joints 6-8 are slightly truncated at the apex, 7 and 8 being at the same time strongly compressed have a subperfoliated appearance. The mandibles are fur-

nished with a bifid tooth. The 3rd joint of the maxill. palpi is of the shape of an inverted cone, the 4th minute and truncated at the apex. The thorax is of an obovate form, about $\frac{1}{4}$ longer than broad, rounded off before and gradually narrowed below the middle, subquadratic at the base, impressed with 4 foveæ or pits, the posterior angles rounded off. Scutellum minute. Elytra with 2 short humeral costæ, separately rounded off at the apex. Legs stout; 2 posterior coxæ distant; tibiæ slightly bent at the base, subcylindric at the apex, the 4 anterior ones hairy; tarsi with joints 1-4 gradually decreasing in size, the anterior ones dilated, the joints transversely triangular, the intermediate pair hairy on the inside. Mesosternum of the preceding. Metasternum with a slight longitudinal depression down the middle. Penultimate abdominal segment grooved on the back as in S. alatus. In the enlargement of the anterior tarsi lies, as in the other beetles, undoubtedly a sexual distinction, as it is not equally strong in all individuals. I may mention here that upon some of the individuals I found ticks (some g. allied to Ixodes but not a Gamasus) fastened, one of them having made a wound such as, supposing it to be inflicted at a corresponding place and on a proportionate scale, few animals of a higher order, would, I think, have survived—still this little beetle appeared perfectly at its ease. The parasite alluded to had fastened itself right in the centre of the forehead, and the wound it had inflicted in this, one should imagine most dangerous place, was a deep hole or pit with a callous border. The latter led me to infer that the injury was an old one, and the tick being at the time fastened in it (and this so firmly that I had some difficulty in detaching it), I felt sure it had been in this position for months. The injury was observable under a slight magnifier, and I think to compare it to one inflicted by a rifle-ball would be greatly underrating its importance.

II. *Fourth joint of the maxill. palpi acuminated; mesosternal carina strongly developed; eyes large, prominent, coarsely granulated; antennæ distant at the base; 2 posterior trochanters simple; thorax variable; body robust, pyriform, sub-convex.*

a) *Occiput rounded.*

30. SCYDMNÆUS *advolans.* N.

S. long. corp. ¾ lin. Antennæ art. 3 et 4, 5 et 6 inter se subæqualibus, obovatis, 7 majore, subgloboso, 8-10 subglobosis, basi transversim, apice oblique truncatis cum 11° conico clavam formantibus. Palpi maxill. art. 3° elongato, inverte conico, 4° mediocri. Mandibulæ tenues, medio acuminate 1-dentatæ, basi abrupte dilatatæ. Thorax ovato-rotundatus, apice fortius angustatus, basi leviter 2-sinuatus, 4-foveolatus. Elytra apice singulatim rotundata.

The insect is of brown color, the antennæ lighter, the legs still more, and the tarsi and palpi quite so, the femora are dark towards the apex, the head, thorax and suture are occasionally of chestnut color; it is as usual pubescent. The sculpture of the head in this and the following species not, as in the preceding, based upon the oblong square or the oval, but rather upon the form of a ball which in a more or less compressed state is always perceptible; in some instances it is narrowed on one side. In the present species the head is heavy and subglobose. The eyes are large, prominent and coarsely granulated. The antennæ are inserted distant from each other under 2 protuberances of the anterior part of the forehead. The club is 4-jointed, the joints composing it being flat at the base, and, with the exception of the last, obliquely cut away at the apex, the last itself being conic. The maxill. palpi have joint 3 rather elongated and of the form of an inverted cone, joint 4 middling, acuminated. The thorax is of a rounded oval shape and rather strongly narrowed towards the apex. The scutellum is obsolete. The

elytra have the usual rudimentary costæ at the shoulders and are seperately rounded off at the apex. The legs are middling, 2 posterior coxæ inserted close together, trochanters all simple, tibiæ slightly bent at the base, narrowed and subcylindric at the tip, the 4 anterior ones hairy, tarsi with joints 2-3 sub-equal, the first a little longer and the 4th shorter, the 2 anterior ones slightly contracted. I include in this species some individuals which slightly differ from the foregoing description, being more robust, covered more densely and with longer hair, especially on the occiput and thorax, with the latter rather obconico-ovate and the costæ of the elytra more distant, and moreover occasionally of a chestnut color.

30. SCYDMÆNUS *pubescens.* N.

S. præcedente gracilior ; long. corp. ⅔ lin. Antennæ art. 3 et 4, 5 et 6 inter se subæqualibus, subcylindricis, 7° secundo paulo minore, *fortiter cylindrico*, 8-10 subglobosis cum 11° conico clavam formantibus. Palpi maxill. art. 3° inverte conico, 4° minuto. Mandibulæ tenues, medio obtuse obsoleteque uni-dentatæ, basi abrupte dilatatæ. Thorax conicus, latitudine haud longior, basi 4-foveolatus. Elytra et pedes præcedentis, tibiis tamen apice leviter arcuatis.

Less robust than the former, and further distinguished from it by the 7th antennal joint, (the one preceding the club) which is of a strongly cylindric shape, by the minuteness of the last joint of the maxillary palpi, the obtuse and nearly obsolete tooth of the mandibles, the short-conical form of the thorax, and the tibiæ which are slightly bent at the apex.

31. SCYDMÆNUS *pygmæus.* N.

S. statura et colore præcedentis sed longius pubescens et sesqui minor ; long. corp. ⅓ lin. Antennæ art. 4 et 4, 5 et 6 inter se subæqualibus, 7° majore, ovato, 8-10 subglobosis, fortius compressis cum 11° clavam formantibus, hoc magno, obconico, apice obtuso. Palpi maxill. art. 2° tenuiore, 3° inverte conico, 4° minuto. Mandibulæ obsolete uni-dentatæ.

Thorax conicus latitudine parum longior, elytris fortiter applicatus, basi 2-sinuatus et 4-foveolatus. Pedes et elytra præcedentis, his tamen amplioribus.

Strongly allied to the two preceding species, still very much smaller, more compact and covered with longer hair—thus of rather a different appearance regardless of its size. From S. pubescens this species would principally differ in the shape of the 7th antennal joint, also in that of the 3 first club joints which are much more compressed and more hairy in S. pigmæus. The thorax of the latter is more firmly applied to the base of the elytra; the latter have a fuller, more robust appearance about them; the palpi are more slender, and the tooth of the mandibles is pointed. From S. advolans it would principally differ besides in the generalities mentioned above, in the shape the thorax, and in some of the points in which it differs from S. pubescens.

*b) Occiput narrowed.*

32. SCYDMÆNUS *glanduliferus.* N.

S. robustus; long. corp. $\frac{3}{4}$ lin. Antennæ art. 3-7 sensim majoribus, 8-10 globosis, fortiter compressis cum 11° *glanduliformi* clavam formantibus, longe ciliatis. Palpi max. art. 2° tenuiore, 3° inverte conico, 4° mediocri. Thorax conicus latitudine basali haud longior, elytris fortiter applicatus, basi 2-impressus, in impressionibus 2-foveolatus.

Of the size of S. advolans and the plump shape and color of S. pygmæus, the latter being rather lighter than that of S. advolans; it has the longer (especially on the occiput and thorax) hairy vesture of the former. The occiput is slightly narrowed behind. The antennal club is composed of 4 joints, the 3 first of which are strongly compressed, the 4th being plump and of the shape of an acorn with its cup, all are strongly ciliated. The thorax is conic, firmly applied to the base of the elytra, as in the preceding species, depressed, and with two

pits at the base posterior margin with two sinuosities. The shoulder ridges of the elytra are short, but rather strongly marked. The tibiæ are narrowed, sub-cylindric and hairy at the apex. Joints 2-3 of the tarsi are subequal, the anterior pair more, the intermediate less contracted.

### 33. SCYDMÆNUS *graminicola*. N.

S. gracilior; long. corp. ¾ lin. Antennæ art. 3 et 4, 6 et 7, 9 et 10 inter se subæqualibus, 5o adjacentibus paulo longiore, 3-7 subcylindricis, 8 subgloboso, 9-10 fortiter globosis cum 11o clavam formantibus. Palpi maxill. art. 3o inverte conico, 4o mediocri. Mandibulæ apice arcuatæ, medio acuminate 1-dentatæ, basin versus *sensim dilatatæ*. Thorax obconicus basi depressus, 2-sinuatus et 2 foveolatus, rectangulatus. Pedes *tibiis elongatis* basi apiceque arcuatis.

Of the usual brown color, legs and antennæ lighter, tarsi and palpi quite so, femora nigrescent at the apex, hairs of occiput and thorax rather long. The former slightly narrowed behind, the head thus of a somewhat rhomboid form. Antennal club composed of 3 joints, the 2 first of which are strongly globose, the last being acuminated and slightly cut way on one side at the apex. The mandibles are furnished with an acuminated tooth at the middle, bent at the apex, and, what is rather uncommon in this g., gradually enlarged towards the base. The thorax is obconic, rather longer than broad. The elytra are somewhat more stretched than usual in this group, the rudimentary humeral costæ are rather prominent, they are separately rounded off at the apex. Tibiæ, more or less elongated, slightly bent at the base and apex, at the latter place sub-cylindric and hairy. Tarsi with joints 2-3 subequal, first pair slightly contracted. A sexual distinction appears to be expressed in the length of the tibiæ, which are less elongated in certain individuals, which are at the same time less robust than the others. The insect is easily distinguished by its general appearance.

34. SCYDMÆNUS *pyriformis.* N.

S. supra castaneus, subtus brunneo-testaceus, pedibus antennisque dilutioribus, tarsis palpisque flavo-testaceis, antennarum clava nigricante long. corp. ½ lin.

Antennæ art. 3-8 fere subæqualibus excepto 5° parum longiore, 8° subgloboso, minore, 9-10 subglobosis majoribus cum 11° acuminato clavam formantibus. Palpi maxill. art. 3° inverte conico, 4° minuto. Pedes coxis 2 posticis distantioribus; tibiis 2 anterioribus basi apiceque leviter arcuatis, reliquis subsimplicibus.

A pretty little species, at once distinguished by its color which is chestnut, darker at the base and suture of the elytra, and light, more or less brownish or yellowish, below, the antennæ being of the latter color with a nigrescent club. The occiput is slightly narrowed, the head altogether plump, heavy and transverse. The antennal club is composed of 3 subglobose joints the last of which is acuminated and slightly cut away on one side as in some of the preceding species. The thorax is obovate, broadest below the middle and gradually narrowed towards the apex. The elytra have the usual 2 shoulder-ridges and are rather strongly dehiscent at the apex. The 2 posterior coxæ are rather distant at the base; the tibiæ are slightly angustated and subcylindric at the apex, the 4 anterior ones hairy, the first pair moreover slightly bent at the base and apex, but the rest nearly straight.

35. SCYDMÆNUS *angusticeps.* N.

S. castaneus, antennis pedibusque dilutioribus, tarsis palpisque testaceis; long. corp. 1 lin.

Caput magnum occipite *fortiter angustato*, subtrigono, hoc cum thorace longe pilosis. Antennæ art. 3 et 4, 5 et 6 inter se subæqualibus 7-11 gradatim majoribus, vel 9-10 subæqualibus, subglobosis, 8-10 leviter depressis cum 11° clavam formantibus. Palpi maxill. art. 2° tenuiore, 3° inverte conico, 4° mediocri conico-acuminato. Thorax obconicus, basi subquadratus, 2-sinuatus et 4-foveolatus. Elytra costis 2 fortioribus abbreviatis. Tibiæ subrectæ.

A handsome species of more or less deep chestnut color with lighter legs and antennæ. The head is large, heavy and from the eyes to the neck strongly triangular, the occiput and thorax are covered with long hair, which adds much to the peculiar appearance of the insect. The antennæ are thick and robust, the club 4-jointed. The thorax is subquadratic at the base up to the middle and conic towards the apex. The punctures or pits at the base are 4 in number. The scutellum is small. The humeral costæ are stronger developed than in any of the other species and traceable to the middle of the elytra. The tibiæ are nearly straight, subcylindric at the apex, the 4 anterior ones hairy. The tarsi have joints 2-4 nearly subequal.

*B. species without a neck.*

36. SCYDMÆNUS *ovatus.* N.

S. *ovatus*, convexus, brunneus; long. corp. ½ lin.

Caput subquadrato-ovatum. Antennæ art. 3-11 sensim incrassatis, 9-11 subglobosis, depressis cum 11° magno, conico clavam formantibus. Palpi maxill. art. 4° minuto acuminato. Thorax *amplus semiorbicularis*, margine posteriore medio producto, basi 2-foveolatus.

The color of this insect is as usual shaded off from brown to light yellow; however, in other respects it differs materially from all the preceding species. The body is regularly oval, thorax and elytra convex, pubescent. The head is subquadratic-ovate; the eyes rather small, but prominent; the neck is altogether wanting. The antennæ are at the base as distant from each other as they can be being inserted below the eyes; the club is 3-jointed; the joints increase gradually in size from the 3rd to the 11th. The maxill. palpi have the 2nd joint slender, the 3rd rather pear-shaped, the 4th minute and acuminated. The thorax is very ample, semiorbicular, of the shape and nearly the size of the apical

half of the elytra, the basal angles are acuminated and slightly envelope the shoulders, the posterior margin is prolonged in the middle, towards the scutellum the foveæ or basal impressions are 2, and rather distant from each other. Scutellum obsolete. Elytra with 2 depressions at the base. Tibiæ straight; tarsi with joints 1-4 subequal or very nearly so. Mesosternal carina middling.

---

## No. IV.

### NOTE *on* CYCLOSOMUS *flexuosus*. *Fab.*

(This insect was erroneously described by me in the first edition of these papers. However, I retain part of my description, as it notices some peculiarities of the insect, of which I find no mention made in any of the works within my reach. It was owing to these peculiarities, and Lacordaire's statement that the three known species were of yellowish and green colour, as well as to having no detailed description of the C. flex., that I described it as new.)

To judge from what Lacordaire says of this g. in his g. des Col. (a work upon which, as I have said elsewhere, I look as containing the essence of all former researches), it would appear that the present species differs very materially from the three others hitherto described, namely in the flatness of the antennal joints, in the serrated edges of the tibial spurs, in the existence of the tarsal brushes in the male, and in the color—to say nothing of some other minor distinctions. The three first of these peculiarities (too important not to have been noticed by Lacordaire or any other describer of the g. had they been aware of them) add considerably to the characteristics which already constitute this g. one of the most remarkable of the extensive family of the Carabidæ.

The antennæ are strong, stiff and short, reaching hardly beyond the base of the thorax: joint 1 is of middling size,

2 short, 3-4 are subequal, 5 rather shorter, 6-11 still shorter, subequal: joints 3-11 *are strongly compressed and pubescent, but only on the narrow side.* The tibiæ are strongly bicalcarated at the apex, the inner spur being longer than the outer one. In all legs these spurs are slightly compressed and serrated along the two narrow sides. Joints 1-4 of the anterior male tarsi, are slightly dilated, the apex of the 1st, 2nd, and 3rd, being at the same time furnished each with *two small white brushes,* below fenced in by spines. In the intermed. tarsi of the male, the apical half of joint 1, and joints 2 and 3, are furnished on the inner side with strong brushes of reddish colour, bordered by rows of spines, *the entire lower surface forming one thick brush,* and not two, as in the anterior pair.

Regarding the habits of these insects, one would feel inclined to suspect them to be of a semi-aquatic nature, that is, the insects to frequent the banks of rivers, or other damp places, and I know that some entomologists are under the impression, that their mode of living is that of the g. Omophron. However, to my experience, the direct contrary is the case: *they live in the driest, hottest, and sandiest places that can be found, where they burrow in the sand, exactly in the manner of the well-known g. of the Amaras.* I have of late taken considerable numbers of them in the Cinnamon Gardens of Colombo, in holes made by the rooting up of weeds, into which they had run, and could not escape, the loose sand giving under them whenever they attempted to do so. When wishing to find them, I had to search the corners of these holes, where some leaves had usually collected, when I would sometimes dig up eight at a time, not seldom rather deep in the sand. They are quick of motion, and being thus pursued, immediately bury themselves in the sand.

The diagnosis as given by Lacordaire requires at all events

to be entirely recast, and the g. to be removed from the tribe (Cratoceridæ, one of the characteristics of which is the want of foot-brushes in the male) in which he has placed it.

## III. Ochthephilus. *n. g.* N. *Fam.* Carabidæ, *trib.* Pagcnidæ.

Corpus oblongum, subparallelum, valde depressum. Caput magnum antice trigonum; oculis magnis, ovatis, prominulis; collo forti. Mentum subquadrate emarginatum, lobis extus fortiter rotundatis, apice abrupte acuminatis, dente parvo acuminato. Ligula parva apice quadrate truncata, libera, paraglossis setiformibus marginem anteriorem longe sperantibus. Palpi robusti art. 4° elongato tenui, acuminato; maxillares art. 3° interne, 2° externe incrassato; labiales art. 3° robusto externe incrassato, 2° parvo, cylindrico. Labrum parvum basi angustatum subtrigonum, antice emarginatum. Mandibulæ elongatæ, porrectæ, trigonæ, apice arcuatæ, infra medium pluries dentatæ. Antennæ robustæ corporis med. fere attingentes, art. 1° et 11° mediocribus, subæqualibus, 2-4 et 5-10 inter se subæqualibus, illis subcylindricis, his cum 11° ovatis. Thorax subcordatus basi quadratus. Pedunculus brevis. Elytra apice rotundata. Pedes anteriores tibiis profunde emarginatis tarsis leviter contractis, art. 1-4 gradatim minoribus, art. 1° subcylindrico, 2-4 subtrigonis, hoc subtus apice spino tenui munito, 5° sat magno, unguibus simplicibus.

### 37. Ochthephilus *Ceylanicus.*

O. alatus brunneo-testaceus, pedibus palpisque testaceis, tenuiter pubescens, fronte profunde 2-sulcata; elytris obsolete striatis, in striis punctatis; long. corp. 1⅓ lin.

In fluviorum ripis Bembidiorum more victitat.

Apparently allied to Trechus, from which, however, it would seem to differ in the structure of the palpi, the labrum, &c.

The head is as broad as the thorax, and altogether of about the same size; it is strongly triangular from the eyes to the tip of the mandibles, the forehead is impressed with two deep longitudinal furrows; the eyes are large, rather oval and

prominent, behind them the head is abruptly contracted into a thick neck. The antennæ are long and thick, reaching nearly to the middle of the body, joints 1 and 11, 2-4, 5-10 are subequal among themselves, 5-11 oval, 1-4 subcylindric. The labrum is small, rather triangular being narrowed at its base, it is emarginated in front with a slight angle in the middle of the emargination. The mandibles are long, straight, triangular, bent at the tip only, dentated below the middle, the one more so than the other. The maxillæ are thin and slender, gently bent outwards at the base and inwards at the apex, the outer lobe corresponding with the inner one in shape and strength. The palpi are robust, both the maxillary and labial ones have joint 4 elongated, thin and acuminated, in fact needle-shaped, firmly implanted in the preceding one, not loosely hinged to it. The maxillary ones have joints 3 and 2 robust, the former swollen on the inner, the latter on the outer side. In the labial ones joint 3 is still plumper than in the others, but differs in shape by being incrassated on the outer, instead of the inner side, the second joint being at the same time quite small and cylindric. The mentum is large and simple as above described. The ligula is small, oblong, very slightly narrowed and transversely cut away at the apex, the paraglossæ separate from its sides a little below the anterior corners, they are setiform and reach much beyond it. The whole organ is of membranaceous texture, having, however, a more substantial centre or back. The thorax and elytra are simple and sufficiently described above. I may add that the former is divided by a longitudinal furrow and that both are furnished with a narrow margin at the sides. The scutellum is very small, and the abdomen furnished with a short peduncle. The legs are weak, simple, and nearly equal, the anterior tibiæ are deeply notched, the lower margin of the fourth tarsal joint of the same pair is furnished with a long

thin spine, the apex of which fits in between the claws, as in Lymnæum Steph. I have been unable to discover any footbrushes or other sexual distinctions in the specimens before me and therefore conclude that accidentally they are all females.

The habits of the insect are those of the Bembidia in whose society it lives upon the banks of rivers, taking like them readily to its wings. I have found it occasionally in considerable numbers upon the sandy banks of the Maha Oya in the neighbourhood of Negombo close to the edge of the water.

### IV. Creagris. *n. g.* N. *Fam.* Carabidæ, *trib.* Lebiidæ *vel* Pericalidæ.

Corpus oblongum valde depressum. Caput magnum robustum; oculis mediocribus, ovatis, sat prominulis; collo brevi. Mentum forma ferri equini vel trifurcatum (hinc n. g. Creagris) lobis angustis, subparallelis, apice oblique truncatis, angulo interno producto, dente lobis parum breviore, tenui, acutissimo. Ligula magna cornea apicem versus dilatata, apice transversim truncata angulis rotundatis, paraglossis sat robustis connatis marginem anter. non attingentibus, apice vix liberis, ovatis. Palpi maxill. art. 4° claviformi apice fortiter truncato, 3° parvo, 2° intus excavato; labiales art. 4° subelliptico, truncato. Labrum maximum, suborbiculatum, convexum. Mandibulæ parvæ basi obsolete unidentatæ, labro obtectæ. Antennæ robustæ humeros parum superantes submoniliformes art. 1, 3 et 11 longitudine fere subæquali, mediocribus, 2° parvo, basi cylindrico, apice rotundato, 4-10 subæqualibus, cum 11° ovatis. Thorax parvus, capite sesqui minor, transversus, longitudine duplo fere latior, infra med. fortius angustatus, basi parum prolongatus. Pedunculus brevis. Elytra apicem versus leviter dilatata, apice fortiter subquadrate truncata. Pedes robusti simplices subæquales, ant. tibiis profunde excavatis, omnes tarsis brevibus, art. 1° sequentium 2 fere longitudine, subcylindrico-trigono, 2-3 gradatim minoribus, 2° trigono, 3° transversim trigono, 4° magno, profunde bilobo, 5 mediocri, unguibus simplicibus, art. 4° subtus dense penicillato.

### 38. Creagris *labrosa*. N.

C. picea, subtus dilutior, ore antennisque, coxis, trochanteribus, femorum

tibiarumque apice et tarsis brunneis; dense punctata tenuiterque pubescens; elytris striatis; long. corp. 4½ lin.

Specimina nonnulla prope Colombo nocte ad lumen cepi.

I consider this scarce and interesting insect to form a passage between the Lebiidæ and Pericalidæ, but am doubtful to which of these two tribes to refer it as, although it partakes of the characteristics of either, it is at the same time distinct from either. Distinguished in several respects, its most extraordinary character lies in the curious shape of the mentum. This is, however, easily described as large, of the shape of a *horseshoe* with a long, thin, very pointed tooth in the middle, the apical half of the sides (lobes) being at the same time gently dilated, the apex itself being obliquely cut away from the outer towards the inner side (the inner angle being the most advanced) and slightly dentated at the edge thus formed. Or it may also be described as *a fork* with the outer teeth somewhat enlarged, truncated at the apex and so forth. The other parts of the mouth have not much to distinguish them, with the exception, however, of the labrum which attains a very extraordinary degree of development, occupying *rather more than one third of the whole head, although the latter itself is large and heavy.* It is of a suborbicular shape, very slightly produced in front into an obtuse angle, is vaulted, covers the mandibles, has two longitudinal impressions at the sides of the base and is highly polished. The head has two impressions in front of the eyes, is densely punctured and thinly pubescent, it is strongly but gradually contracted behind the eyes and formed into a short neck. The antennæ are strong and reach a little beyond the shoulders, joints 1, 3 and 11, are of about equal length, middling, the former two subcylindric; joint 2 is small, rounded, 4-10 subequal and with the 11th oval. The thorax is small, only half as large as the head, rather narrower, strongly transverse, nearly twice as broad as long, slightly

emarginated in front, the anterior angles rounded, contracted below the middle, subquadratic and prolonged at the base, posterior angles depressed, longitudinally divided by a deep furrow. The elytra are striated, and, as the thorax, densely punctured and thinly pubescent. The legs are strong, simple, and subequal, the anterior tibiæ are deeply notched, the first joint of the tarsi is as long as the two succeeding ones together, subcylindric, the 2nd triangular, the 3rd of a similar but more transverse form, smaller; all three have the apical angles acuminated, the 4th is large and deeply bilobed, the 5th middling, thin, the claws simple. The tarsi are altogether short and strong, the first joint is furnished with longer, the 2nd and 3rd with shorter stiff hair, whilst the 4th is strongly penicillated below. The anterior tibiæ are slightly spinose, the others more so.

The legs in all my specimens are exactly the same, and I hardly know whether they are males or females. The insect has a peculiar, rather strong smell about it, resembling that of soap.

## V. Heteroglossa. *n. g.* N. *Fam.* Carabidæ, *trib.* Galeritidæ.

Corpus oblongum, subparallelum, depressum, tenuiter hirsutum. Caput mediocre, oculis semiglobosis sat prominulis; collo brevi. Mentum sat profunde subquadrate emarginatum, lobis magnis extus fortiter rotundatis apice abrupte acuminatis, dente magno excavato, apice leviter inflecto, obtuso, magis minusve profunde sinuato. Ligula subcornea apice libera, truncata: vel quadrata vel obconica vel leviter bisinuata; paraglossis cylindricis, marginem anteriorem longissime superantibus, magis minusve incurvatis. Palpi hirsuti art. ultimo sat elongato, subcylindrico, apice truncato vel subtrigono. Labrum transversum antice emarginatum. Mandibulæ validæ trigonæ, apice arcuatæ, basi pluries dentatæ. Antennæ robustæ corporis med. attingentes, art. 1° incrassato sequentibus 2 longiore, 2° parvo, 3-11 subæqualibus. Thorax subcordatus, basi transversim truncatus leviterque prolongatus. Pedunculus brevis. Elytra apice fortiter subquadrate truncata, costata, costis 16 majoribus, in

interstitiis subtilissime bicostulata, in sulcis (sulco e tribus inter costas binas majores medio excepto) tenuiter pilosa, in omnibus transversim rugulosa. Pedes anteriores tibiis sat fortiter emarginatis, tarsis maris art. 1-3 leviter dilatatis, subtus squamularum seriebus 2 munitis, art. 1° elongato-trigono, 2-3 rotundato-trigonis, 3° præcedente parum minore, 4° parvo, cordato, 3° plus sesqui minore, his omnibus angulis acuminatis, 5° magno, unguibus simplicibus.

This diagnosis may appear somewhat vague, still I have been unable to express the characteristics of the insects from which it is drawn in more precise terms, although they have features quite peculiar to themselves by which they are easily recognized when once seen.

The points on which the 3 spec. which form this g. more or less disagree are the following: 1) the labrum: this is more transverse in H. elegans and less deeply emarginated in H. ruficollis than in the other 2 spec. respectively—still in all 3 it is *emarginated* and has moreover the peculiarity of being furnished with bristles at the 2 anterior corners; 2) the mentum: this is subquadratically emarginated, the lobes being strongly rounded on the outer side and abruptly acuminated at the apex, at the base of the emargination it is furnished with a broad, excavated tooth which is inflected and obtuse at the apex—so far all three species agree—however, whilst in H. elegans and ruficollis, this tooth is slightly emarginated at the apex, it is sharply notched in H. bimaculata, in fact bilobed, the lobes being large and rounded at the apex. I look upon this notch, which is sharp but not deep, as a mere variation from the emargination existing at the apex of the tooth of the former 2 species; 3) the palpi: these, labial as well as maxillary ones, have their terminal joint truncated at the apex—and so far again all 3 species agree—however, whilst this joint is of elliptic form in the palpi of H. ruficollis, it is in H. elegans only so in the labial ones, that of the maxillary ones being cylindric at the base. In H. bimaculata finally, this joint is

rather clubshaped or subtriangular and stronger truncated than in the former 2 species; 4) the ligula: this organ is of subcoriaceous texture, middling size, the shape of an oblong square, free and transversely truncated at the apex—these characters are common to all 3 spec. and in H. ruficollis I have nothing to add to it; however, the anterior margin, which is straight in this species, is slightly bisinuated in H. elegans, the outer angles being acute and the central one obtuse. The ligula of H. bimaculata differs from both the former in as far as it is narrowed towards the apex and depressed towards the sides and the front, the anterior margin is otherwise cut away straight, without any sinuosities, but it is rather strongly armed with bristles. The paraglossæ agree in all 3 spec. in as far as they are highly developed, reach much beyond the anterior margin of the ligula and are more or less bent inwards. Their greatest development they assume in H. elegans, in which they nearly touch each other in front of the anterior margin, being cylindric and slender at the same time. In H. ruficollis the paraglossæ are somewhat shorter and straighter, and in H. bimaculata still more so.

On all other points the 3 spec. perfectly agree, in saying which I lay particular weight upon the unusual sculpture of the elytra, and the rather peculiar hairy vesture of the insects, bearing also in mind their general appearance, proportions, system of coloration, mode of living, etc. As to the hairy vesture of certain parts of the body and the sculpture of the elytra it is true that these are not generally looked upon as of much importance, however, they appear to me so in this instance, as they present certain unusual variations, repeated in all 3 species. The hairy vesture consists in thin yellowish or reddish hairs thinly seminated over the back and still more thinly over the whole of the lower surface of the insects, being at the same time longer at the latter place. This vesture

acquires its greatest density on the legs, especially the tibiæ and tarsi, whilst their uniform presence at the palpi forms almost a generic character. The elytra are exquisitely sculptured into about 8 larger costæ on either of them and into 2 smaller ones between every 2 of these, the furrows thus formed are finely transversely rugose and (with the exception of the central furrow between every 2 larger costæ) thinly pubescent.

39. HETEROGLOSSA *elegans*. N.

H. supra rufo-castanea, capite obscuriore, maculis 2 humeralibus obsoletissimis ferrugineis; subtus dilutior, pedibus, antennis oreque subtestaceis, elytris ad angulos apical. extern. testaceis; long. corp. 3½ lin.

In lacus Colombensis ripis sub vegetab. putrescent. non infrequenter cepi.

An agile, pretty little insect of chocolate color and with its family features about it. Head smooth, polished, above and below slightly punctured, with two impressions in front of the eyes, anterior angles of labrum rather acuminated. Thorax deeper and more densely punctured than the head, with the elytra thinly hirsute, rather strongly emarginated in front, less so behind, sides, especially at the basal angles, depressed, divided longitudinally by a deep furrow. Scutellum, like thorax, punctured and hairy. Elytra with the inner apical angle right and the outer rounded off, largely punctured within the margin, especially near the apex. Tibiæ with a row of larger spines down the outer and a row of smaller ones down the inner side, 4 calcarated at the apex, the 2 inner spurs larger.

40. HETEROGLOSSA *ruficollis*. N.

H. colore præcedentis sed obscurior, thorace pectoreque rufo-testaceis, antennis art. 3 primis nigrescentibus; long. corp. 4½ lin.

Cum præcedente et per occasionem nocte ad lumen cepi.

The shape of the body is quite that of the former but the insect is larger. The head is less distinctly punctured than in the former and there is an additional impression in the middle of the forehead. The thorax is also less deeply punctured, but the divisional furrow is more so than in the preceding species. The anterior tibiæ appear somewhat less deeply notched. There is nothing else to add to the description that has not been pointed out already.

41. HETEROGLOSSA *bimaculata*, N.

H. subcastanea, thorace dilutiore, capite rufo-testaceo, elytris ante medium maculis 2 flavis, pedibus abdominisque apice testaceis; long. corp. $5\frac{1}{2}$ lin. variat colore obscuriore et dilutiore.

Ubi præcedentes sed infrequenter legi.

Head, with the exception of the forehead, deeply punctured, with two impressions in front of the eyes, anterior angles of labrum rounded. Thorax densely and deeply punctured, with elytra thinly pubescent. The latter with a round yellow spot at the middle of either. This species is capable of discharging a pungent, blistering liquid of brown color and strong smell from the anus. I have often handled the other 2 spec. but observed nothing of the kind.

---

NOTE on BARYSOMUS *Gyllenhali. Dej.*

A gross oversight of the vesture of the anter. male tarsi and some incorrect information regarding the insect I received from Europe led me into the error of describing it as new in the first edition of these papers. However, having since examined it more closely, I may mention here that joints 2-4 only of the anterior male tarsi are furnished with squamulæ below, and not joints 1-4, as stated by other authors.

## No. V.

The Trigonotomidæ with an elliptic terminal joint of the palpi are abundantly represented amongst the Ceylon Carabidæ, thus making amends for the want of other tribes of the section to which they belong. I have now before me a great many individuals of different species which I have endeavoured to distribute into genera after the works of Lacordaire, Dejean and others of less importance. A single glance almost convinced me that they must belong either to Abacetus, Distrigus or Drimostoma—genera closely allied, and whose principal, in fact only essential, distinction would appear to reside in the shape of the mentum-tooth. If it is a well established fact, as cannot be doubted from the above authors, that this tooth is *pointed* in Drimostoma, *large, rounded, equalling the lateral lobes* in Abacetus, and *large and truncated* in Distrigus, the species described below could not, as to their genera, be distributed otherwise than I have done; namely 5 Distrigus and 1 Drimostoma. The species which I have drawn to the former genus have a large, more or less square tooth, slightly rounded at the anterior angles. It is impossible to call this tooth *pointed* in any of the five species; they cannot therefore belong to the genus Drimostoma, nor can any of them be drawn to Abacetus, which genus is moreover apparently exclusively African. As to the insect which I have placed in the genus Drimostoma, its mentum-tooth is not exactly pointed, but it is altogether narrower than in Distrigus and might well be called "assez aigué," as Dejean describes it. This insect differs, moreover, very materially in general appearance as well as in its details from my Distrigi and I feel sure that it belongs to the genus in which I have placed it, although it does not quite agree with Lacordaire's description—the labrum being emarginated in front,

the second joint of the maxill. palpi exhibiting nothing unusual &c. As to the species which I have established, I feel very certain that they are new and good ones, as it would appear from the quotations in "Lacord. Gen. d. Col." that since Dejean's descriptions no new ones of Indian species have been published.

These insects live in the manner of the European Feronidæ, but appear to affect rather damp localities, some of them take freely to their wings and fly commonly into houses in the evenings during the rainy weather.

42. DISTRIGUS *costatus*. N.

D. nigerrimus, nitidus, subtilissime parce punctulatus, ore pedibusque piceis, tarsis antennisque castaneis, palpis brunneo-testaceis, long. corp. $4\frac{3}{4}$ lin.

Capite clypeo fronteque leviter excavatis, hac impressionibus 2 lateralibus semilunaribus profundissimis rugulisque nonnullis transversis; mandibulis fortiter sulcatis; menti dente magno excavato; thorace longitudine parum latiore, breviter obcordato, lateribus rotundato, basin versus angustato, basi truncato medio leviter emarginato, antice lateribus fortiter deflexo, dorso posticeque plano, basi longitudinaliter profunde 2-impresso, inter impressionibus leviter transversim rugoso, ad marginem ant. et post. obsolete sulculato, dorso rugulis nonnullis transversis subtilibus, linea med. longitud. subtili extremis profundis diviso; elytris profunde striatis, interstitiis fere planis, puncto ad striam 2m medio obsoleto; *tarsis dorso fortiter* 3-*costatis;* prosterno plano.

Sub quisquiliis in ripis lacus Colombensis communis.

Apparently closely allied to D. impressicollis Dej. However, if the description given in the Spec. gen. embraces all the characteristics of this latter spec. mine is undoubtedly different from it. Dejean says nothing about the costæ on the back of the tarsi which are the principal characteristic in my spec. nor are such costæ of general occurrence or of so little importance that it could be supposed they had been left

unnoticed by Dej. from these reasons. I cannot possibly call the thorax of my D. costatus "subquadratic;" it is rounded at the sides, narrowed behind and cut away at the base. The striæ of the elytra of my species are not punctured in the bottom as those of the D. impressicollis are stated to be. In mentioning the interantennal impressions Dej. would certainly not have overlooked the depression in the centre of the fore-head nor that of the clypeus, which distinguish my insect, had they existed in the one he described. The former is round, the latter transverse. I further fail to discover in my spec. the "reflet un peu changeant" of the elytra, and that the base of the thorax is "assez fortement ponctuée et que les points se confondent souvent ensemble;" nor do I consider the interstices of the elytra "relevés, presque arrondis," or the head "un peu rétrécie posterieurement," the skull is of the same breadth from the antennæ to the occiput.

43. DISTRIGUS *submetallicus*. N.

D. supra niger æneo-micans, nitidus; subtus piceus, pedibus, ore antennisque obscure castaneis, tarsis brunneo-testaceis long. corp. 3 lin.

Capite præcedentis sed fronte haud excavato; mandibulis strigosis; menti dente mediocri; thorace breviter rotundato-obcordato, præcedente lateribus magis rotundato, antice magis deflexo, postice fortius quadrato, hic 3-impresso, impressione media lateralibus minus profunda ad apicem prolongata, inter impressionibus punctato longitudinaliterque ruguloso; scutello excavato; elytris striatis, ad striam $2^m$ ante medium utrinque puncto impresso, interstitiis deplanatis; tarsis lævibus; prosterno profunde canaliculato.

Ubi præcedentem specimen singulum m. cepi.

44. DISTRIGUS *rufo-piceus*. N.

D. rufo-piceus, nitidus, pedibus, thoracis elytrorumque margine testaceis, antennis brunneo-testaceis, mandibulis brunneis, long. corp. 3 lin.

Capite inter antennas profunde longitud. 2-impresso, fronte medio

leviter depresso, labro quadrato-rotundato, mandibulis infra medium sulcatis, menti dente mediocri, excavato, apice subrotundato; thorace D. costati, sed parum brevior, basi 2-impresso, linea media longitud. fere obsoleta, rugulis nonnullis transversis subtilibus; scutello, elytris pedibusque præcedentis sed elytris puncto ad striam 2m infra medium obsoleto; prosterno leviter canaliculato.

In ripis lacus Colombensis specimen singulum legi.

## 45. Distrigus *æneus*. N.

D. supra æneus, subtus piceus, pedibus dilutioribus, antennis palpisque rufo-piceis, long. corp. 2½—3 lin.

Capite ante oculos profunde oblique 2-sulcato, rugulisque nonnullis transversis, clypeo fronteque sæpius leviter depresso, mandibulis leviter sulcatis, menti dente mediocri; thorace rotundato-obcordato, basi quadrate truncato, 3-impresso, impressione media minus profunda in lineam subtilem ad apicem prolongata, inter impressionibus profunde punctato, antice leviter strigoso, dorso subtiliter transversim ruguloso; elytris striatis, ad striam 2m medio distinctius puncto impresso; prosterno sat fortiter canaliculato.

Prope Colombo in arenis subhumidis et nocte ad lumen communissimus.

## 46. Distrigus *Dejeani*. N.

D. piceo-niger, subtus sæpius rufo-piceus, nitidus, capite æneo-micante, pedibus, elytrorum margine antennisque rufo-piceis, palpis testaceis long. corp. vix. 2½ lin.

Capite inter antennas 2-impresso, fronte leviter excavato, mandibulis subtiliter sulculatis, mentum præcedentis; thorace robustiore, ut in præcedente sculpto et signato sed antice non strigoso; elytris pedibusque præcedentis, illorum tamen puncto minus distincto; prosterno fere plano.

Cum præcedente communissime occurrit.

## 47. Drimostoma *Ceylanicum*. N.

D. nigro-piceum, nitidum, pedibus piceis, tarsis, antennis oreque, dilutioribus, palpis testaceis, long. corp. 2¾—3 lin.

Capite ante oculos profunde 2-impresso, labro antice leviter emarginato, mandibulis elongatis, rectis, acutis, lævibus, menti dente sat acuminato, antennis art. 2-4 gradatim longioribus;* thorace obcordato, postice fortius angustato, quadrato, lævi, basi 2-impresso, linea longitud. med. diviso, antice impressione semilunari (impressionibus his omnibus profundioribus); elytris striatis, interstitiis parum elevatis; prosterno sat fortiter longitud. impresso.

In prov. occid. non frequenter occurrit.

---

## 48. CASNONIA *punctata.* N.

C. supra subtusque (occipite abdomineque exceptis) dense profundeque punctata, brunneo-picea, elytrorum margine maculisque 2 apicalibus longitudinalibus cum margine confluentibus brunneo-testaceis, pedibus flavis, trochanteribus, geniculis tarsisque obscurioribus, ore dilute brunneo, antennarum art. 1o palporumque art. 2 basalibus flavis; long. corp. 3 lin.

Specimina nonnulla mens. Decemb. prope Colombo nocte ad lumen cepi.

Smaller than the Ophionea cyanocephala. The head is robust, with two impressions between the antennæ and a third just above them, somewhat of the shape of an inverted V. Occiput less narrowed than in O. cyanoceph., smooth. The anterior part of the head deeply punctured. The labrum is slightly produced in the middle. Thorax much plumper than in O. cyanoceph., hardly as long as the head, not much narrower, conic, considerably narrowed and cylindric at the base, densely and deeply punctured, especially at the base. Elytra with the shoulders straighter than in O. cyanoceph., impressed with rows of deep punctures growing smaller and shallower towards the apex, with a few small hairs near the latter part; in the 3rd and 5th interstice three setigerous punctures, in the 3rd and 4th interstice a longitudinal apical

* In the Distrigi just described, joints 3 and 4 are sub-equal.

macula of yellowish color flowing together with the margin which is of the same color, two shallow impressions on either side, one below the shoulders, the other near the apex. Legs shorter than in O. cyanoceph.

49. CASNONIA *pilifera*. N.

C. glaberrima, nitidissima (quasi lacca obducta), pilis longis sparsis vestita, nigra, ore (labro excepto) antennisque brunneis, his apicem versus dilutioribus, elytris maculis 2 subapicalibus argenteis, pedibus piceis, femoribus basi albis, trochanteribus obscurioribus, tibiis tarsisque brunnescentibus; long. corp. $3\frac{2}{3}$ lin.

Specimina nonnulla cum præcedente cepi.

This elegant species is of the same size as the O. cyanocephala, but, with the exception of the elytra and abdomen, which are shorter and plumper, still more slender and graceful. Head large, very narrow and prolonged behind, much more so than in O. cyanoceph., with two large shallow impressions between the antennæ, and another small one just above them. Occiput slightly transversely rugose. Thorax very slender, half as broad as the head, of hardly the same length, obconic, constricted below the apex, then gradually increasing in size to below the middle, the base abruptly narrowed, cylindric and impressed with three deep anuliform wrinkles. Elytra about as long as thorax and occiput together, increasing very sensibly in breadth to below the middle. The apex is much more obliquely cut away than in O. cyanoceph. or the preceding species. The shoulders are full and hide the margin, just below them the elytra are deeply excavated, showing, moreover, three deep longitudinal impressions in the bottom of either excavation and a slight yellowish spot, hardly to be distinguished, at the outer part of it. A round spot of silvery appearance adorns the hind part of either elytron. There are two rows of long thin

hairs, placed at considerable distances from each other, on the back of either elytron and a third just within the margin; the same thin hairs are scattered about the thorax, femora, and elsewhere. The legs are longer and more slender than in O. cyanoceph.

The Ophionia cyanocephala is not scarce in this part of the Island, it affects rather damp, grassy localities where it mounts upon the stalks of the plants as Helfer has observed of some species in Bengal, but quite different from the observations Lacordaire has made with regard to the American spec. of the genus. However, it is much more frequently taken about the light at night. The 2 spec. just described are much scarcer. Mr. C. A. Dohrn of Stettin writes to me that he has received another spec. from me (C. Cypris D.) which, however, I do not recollect; it would appear to be smaller than either of the former, black, with white tips to the antennæ.

---

## VI. Symphyus, *n. g.* N. *Fam.* Carabidæ, *trib.* Feronidæ.

Corpus robustum oblongo-ovatum, subdepressum. Caput mediocre postice haud angustatum, oculis mediocribus, sat prominulis, globosis. Mentum semicirculare profunde emarginatum, dente forti spiniformi, lobis haud breviore, ligulæ connato (hinc n. g. Symphyus), profunde excavato. Ligula subcoriacea inverte trigona, dorso elevato, paraglossis magnis connatis, eam sat longe superantibus, apice cylindricis. Palpi art. 4° ovato, apice truncato; maxillares art. 3° elongato. Labrum parvum profunde angulate emarginatum. Mandibulæ validissimæ, subtrigonæ, porrectæ, una 1-, altera 2-dentata. Antennæ filiformes, humeros parum superantibus, art. 1° mediocri, 2° parvo, 3° sequenti paulo minore, 4-11 subæqualibus, 5-11 depressis. Thorax subquadrato-cordatus lateribus rotundatus, basi angustatus, quadratus, angulis posticis leviter oblique truncatis. Elytra ovata, parallela, apice rotundata et leviter utrinque sinuata. Pedes mediocres, tibiis ant. leviter dilatatis,

profunde emarginatis; intermed. fortiter spinosis; tarsi art. 1° cylindrico-trigono, 2-3 trigonis, 4° obcordato, unguiculis simplicibus. (Mas latet).

### 50. SYMPHYUS *unicolor*. N.

S. niger, nitidus, glaber, pedibus oreque piceis, long. corp. $8\frac{1}{4}$ lin. lat. 3 lin.

Capite inter antennas 2-foveolato, mandibulis sulcatis; thorace antice haud, postice vix emarginato, hic 2-impresso, linea longitud. media diviso, ad marginem posteriorem longitud.—, dorso subtiliter transversim ruguloso; scutello leviter excavato; elytris striatis, in striis punctatis, interstitiis vix elevatis, cum thorace anguste marginatis.

Specimen singulum f. prope Colombo mens. Decembr. nocte ad lumen cepi.

This description is made after a single female individual, but I have little doubt that the insect belongs to the numerous tribe to which I have referred it, in which it ought perhaps to be placed near Eccoptogenius Chaud. I am however, not sure whether the shape of its ligula does not entitle it to a place amongst the Anchonoderidæ. I may add to the above description that the accessory stria of the elytra is present, but that the puncture usually found upon the 3rd interstice is wanting. The general appearance of the insect presents nothing whatever particular, however, upon further inspection the deeply notched labrum and the strong porrected mandibles are very striking. The labrum appears to me of extraordinary construction: the mentum is large and of semicircular shape, deeply emarginated, which renders the lobes heavy, rounded outside and pointed at the tip. In the bottom of this emargination stands a pointed, spinelike tooth, as long as the lobes. This tooth is deeply excavated or grooved and is clearly seen to be to its full length soldered together with the basal part of the ligula; probably the entire mentum is in this manner connected with the adjoining part of the ligula, but in the other parts it is not so clearly observable as in the tooth, and

I have not dissected the labrum. The ligula itself is of a leathery consistence, of the shape of an elongated inverted triangle with an elevated back, the anterior margin is straight and somewhat prolonged beyond what would be the sides of the triangle. The paraglossæ are of membranaceous texture, very broad, adhering to the sides of the ligula to its full length, taking then a slender, cylindric form and reaching considerably beyond it, being at the same time slightly bent inwards.

## VII. Calodromus. *n. g.* N. *Fam.* Carabidæ, *trib.* Harpalidæ.

Corpus robustum, ovatum, subconvexum. Caput mediocre subquadratum, postice haud angustatum; oculis minoribus sat prominulis. Mentum profundius sublunate emarginatum, edentatum, lobis obtusis. Ligula oblonge quadrata, apicem versus dilatata, apice medio leviter producta, libera, paraglossis robustis eam parum superantibus, apice obtusis. Palpi art. 4o elliptico, apice leviter truncato. Labrum subtransversum, antice emarginatum, angulis rotundatis. Mandibulæ validæ, una 1-, altera 2-dentata. Antennæ robustæ, thoracis basin attingentes, art. 1, 3, 11 et 4-10 inter se subæqualibus, 1-2 cylindricis, 3o basi angustato, 4-11 ovatis, leviter depressis. Thorax transversus, lateribus leviter rotundatus, basi parum angustatus, quadratus, antice leviter emarginatus. Elytra thorace parum latiora, apice rotundata. Pedes robusti, ant. tibiis apice leviter dilatatis, profunde emarginatis, tarsis art. 1-4 gradatim minoribus, 1o subtrigono, 2-4 transversim trigonis, unguiculis validis, simplicibus, *mas* art. 1-4 leviter dilatatis, subtus squamulis 2-seriatim munitis; pedes intermed. et post. tibiis fortiter spinosis, tarsis simplicibus.

### 51. Calodromus *exornatus*. N.

C. glaber, nitidus, supra læte viridis, thoracis margine lato elytrorumque fascia inframarginali testaceis, capite viridi-brunneo, antice brunneo, scutello cum sutura brunneis, subtus brunneus, pedibus testaceis; long. corp. $4\frac{1}{3}$—$4\frac{1}{2}$ lin.

Capite inter antennas 2-impresso, thorace capite quarta parte-, longitudine duplo latiore, basi 2-impresso, leviter rugoso-punctato, linea longitud. media diviso, cum elytris anguste marginatis; his profunde striatis.

Specimina nonnulla mens. Nov. et Decemb. prope Colombo nocte ad lumen cepi.

Very pretty insects apparently closely allied to the African g. Bradybænus Dej. from which, however, they differ in the structure of the ligula and in other minor points. They are quite of the shape of a Harpalus, and I have no doubt that their habits are those of the latter. Joints 4—11 of the antennæ have very much the appearance of grains of rice strung together. The metallic green color with which the insect is adorned on the back is very rich: on the elytra it forms a pattern of two triangles with their tips down, that of the upper one being immersed in the base of the lower one, and the apex of the latter being divided. These triangles are flanked on either side by a broad longitudinal belt of yellowish color. The margin is again green with the exception of the apex which is occupied by the yellowish belt. The thorax is green in the centre and yellowish along the sides. The head is more or less brownish-green, lighter in the middle, the mouth is brown.

---

52. ZOPHIUM *pubescens*. N.

Z. rufo-testaceum, oculis nigris, occipite nigrescente, elytris pubescentibus fuscis maculis 2 subhumeralibus, 1 apicali communi testaceis ornatis; long. corp. $3\frac{3}{4}$ lin.

Antennis art. 1° capitis vix longitudine; labro integro; palpis art. ultimo trigono; menti dente magno obtuso, profunde canaliculato; thorace elongato-cordato, capitis latitudine, illo parum-, latitudine duplo longiore, medio leviter longitudinaliter depresso; elytris subtilissime dense pubescentibus, obsolete striato-impressis, humeris obsoletis.

Specimina nonulla in prov. occid. nocte ad lumen cepi.

This description does not quite agree with Lacordaire's diagonsis of the g. Zophium: the labrum, the tooth of the mentum are not what they ought to be according to this

author. However, Schmidt-Gœbel in his "Col. Birm." has already departed from Lacordaire's formula by describing six species of Zophium with an entire mentum-tooth, which according to the former author, would make them Polystichi rather. The fact is, that this part of the labrum appears to be variable. In all other respects the insect agrees with Lacordaire's description of the g.

The labrum is entire; the first antennal joint is hardly as long as the head, slightly curved and increasing in thickness towards the tip, the second joint is very small and rounded, the rest are subequal, filiform; the tooth of the mentum is very large, almost equalling the lobes, entire and deeply grooved at the apex; the maxill. palpi are porrected, the second joint is as long as the two following together, the fourth, in both the maxill. and labial ones, is triangular or slightly securiform, being obliquely truncated at the tip; the thorax is elongated cordiform, truncated at the base, the back is elevated, divided down the middle by an impression, the commencement of the elevation forms two knobs at the base; the first tarsal joint is as long as the three following together.

---

Amongst the 300 species of Bembidiidæ which have been described from almost all parts of the world, with the exception of Australia, it would appear there are also none from Southern Asia. However, since the publication of Lacordaire's G. d. Col. (1854), in which this statement occurs, various species must have found their way into the Prussian cabinets with my collections from Bengal and this Island. In the former country the Carabidæ are very abundantly represented and I recollect with pleasure the great variety of them, from the gigantic Anthia down to the smallest Bembidium, the banks and the sands of the Ganges used to furnish me when leisurely travelling upon this river some years ago,

from August to October, just after the rains. Nowhere have I seen, nor do I expect to see, such swarms of Cicindelæ—their buzzing flight when disturbed was heard like that of bees. It appeared to me that they did not quit the sands, their favourite haunts, when the tide rose, but allowed themselves to be covered over by the water, as other semiaquatic beetles do. Without especially hunting for them, I brought away with me some 10 species, mostly new, and amongst the rest of the Carabidæ as many Bembidia. In this Island, both in the hills and the plains, there is not a bank of a pond, lake or river, which has not, as in more northern latitudes, its Bembidia, and, contrary to what one would expect, they appear to be more common in the hot low country than in the cool hill region. The majority of the species described below may any day be found upon the banks of the Colombo lake. None of the species which, as I said, must have found their way with my collections to Berlin and Stettin, and thence perhaps elsewhere, have, to my knowledge, been described; the descriptions given below, must, therefore, I am fain to believe, be an interesting addition to the literature of this section of the Carabidæ, however inferior they may be to what they might have been had they been produced in Europe and the insects been collated with allied typical species. I have none of those typical representatives of the gen. at hand nor is my recollection of them sufficiently distinct to permit of my drawing comparisons between them and the Ceylon insects now before me. Nevertheless, I hope I have set forth the peculiarities of my species with sufficient precision to distinguish them from, or identify them with any other Cis-himalayan species that may hereafter be described. As a hopeless confusion appears to exist amongst the subgenera, into which the original genus has been broken up, I have not attempted to refer my species to any of them for fear of thereby doing anything but throwing additional light

on the subject. There is no doubt that many more species exist in this Island and that indeed, as in the case of the Staphylinidæ, they will eventually be found to be quite as abundantly represented within the tropics as without. Nothing but their smallness has hitherto prevented their discovery.

53. BEMBIDIUM *opulentum*. N.

B. oblongum, subconvexum, nebuloso-æneum purpureo-micans, elytris apice sordide testaceis, subtus nigro-piceum, pedibus antennarumque basi testaceis, ore brunneo; long. corp. $1\frac{3}{4}$—2 lin.

Capite inter oculos 2-sulcato, oculis magnis prominulis, labro fortiter transverso, brevi, integro, mandibulis porrectis, antennis art. 2° sequentibus parum breviore; thorace transversim cordato antice posticeque truncato, haud emarginato, depresso, margine basique elevato, medio capite parum latiore, apicem versus modice—, basin versus fortius abrupteque angustato, angulis basalibus fortiter truncatis profundeque foveolatis, linea longitud. media abbreviata diviso; elytris ovatis humeris obsoletis, profunde striate punctatis, punctis apicem versus obsoletis, ante et infra medium utrinque foveolatis, apice lunula magna sordide testacea. Mas latet.

Prope Negombo in ripis Maha-Oyæ, fluvii, specimina nonnulla cepi.

The insect is of bronze color a purple reflect appearing on the back in irregular patches as the light may fall upon it. The palpi and the base of the antennæ are of yellowish color, the apex of the 3rd joint of the maxill. palpi, however, as well as that of the 2nd, 3rd and 4th antennal joint is brown of which color is also the remaining part of the antennæ. The 2nd antennal joint is the shortest, the 3d and 4th are rather longer than the following. The mandibles are rather straight and porrected. The sides of the thorax are almost angular and furnished with a setigerous puncture at the broadest part, that is just before the middle. There are seven distinct rows of punctures on either elytron and an accessory one along the side of the scutellum, the rows decreasing in length towards the margin and the punctures in depth towards the

apex, the first row on either side, however, changing before the apex into a furrow which falls in with that which separates the margin from the rest of the elytron. Before and beyond the middle, in the region of the 3rd row of punctures, is an excavation containing a puncture which is situated upon the 3rd interstice. The excavation nearest the base is the deepest. The apex of the elytra is marked with a spot of dirty yellowish color prolonged on either side along the margin which is here rather broad.

If my memory serves me right, the insect resembles the Tachypus flavipes.

54. BEMBIDIUM *truncatum*. N.

B. oblongum, valde depressum, brunneo-testaceum, oculis nigris, pedibus, antennis palpisque pallide testaceis; long. corp. 1½ lin.

Capite magno, thorace quarta parte prope minore, inter antennas 2-foveolato, oculis mediocribus, antennis art. 3o reliquis minore, 4-11 subæqualibus fortius ovatis; thorace breviter cordato, antice posticeque truncato, haud emarginato, basi subquadrato parum prolongato, foveis basalibus obsoletis sed linea basali latitud. profunda lineaque longitud. med. distinctis; elytris oblongis apice *transversim truncatis*, juxta suturam utrinque obsolete 1-striatis, ante et infra med. puncto impressis.

In prov. occid. rarius.

The small size, large head and truncated elytra effectually distinguish this species. The truncated posterior angles of the thorax and the general appearance induce me to consider it allied to the preceding species, at all events to approach nearer to it than to any of the following species. The eyes are rather small for this g. There are no traces of striæ on the elytra with the exception of one indistinct one along the suture.

55. BEMBIDIUM *tropicum*. N.

B. oblongum, depressum, brunneo-testaceum capite brunneo, elytris dorso nigris cyaneo-micantibus, pedibus, antennis palpisque testaceis; long. corp. 1½ lin.

Capite inter oculos 2-fovelato-sulcato, oculis mediocribus, antennis fortius filiformibus art. 3° reliquis breviore; thorace breviter transversim cordato antice posticeque truncato, haud emarginato, basi subquadrato, angulis basalibus elevatis sed haud foveolatis, linea latitud. basali profunda, infra lineam strigoso, linea media longit. diviso: elytris oblongo-ovatis utrinque juxta suturam 4-striatis, striis externis et his apicem versus obsoletis, in striis punctatis, infra marginem stria profunda abbreviata, ante medium et apicem in interstitio 4° puncto magno impressis, punctis anteapicalibus piliferis in sulcum ad apicem prolongatis semicirculum formantibus: tarsis 4 anterioribus art. 4° subtus apice spinis squamulaceis 2 instructo.

In prov. occid. copiosum.

Of light brown color, the head darker, the elytra blackish on the back with a slight blue reflect, the base, sides and apex brownish. The colors being more or less washed into each other no distinct pattern is observable. The brown spot of the apex, however, is generally pretty clearly set off from the adjoining dark part. The paraglossæ are hardly longer than the ligula which itself is rather large. The antennæ are rather hairy and strongly filiform, (not, as in most other species, increasing in thickness towards the apex the joints growing at the same time more and more oval), joint 3 is the shortest, 2 and 4 are rather longer than the other. The back is impressed with 3-4 distinct striæ on either side of the suture, the external ones being obsolete as are also the remaining ones towards the apex. There is an additional deep stria within the marginal one, extending from the middle to the apex. Before the middle and before the apex there is a puncture situated upon the 4th interstice, the anteapical one of these has a hair in the centre and is prolonged to the apical angle in the shape of a deep, curved furrow. This being the case on either side, the two furrows together form a semicircular figure. The tarsi are each furnished with bristles, especially at the lower margin of the apex of the joints. In the four anterior tarsi joint 4 is furnished at that place with two long

bristles the apex of which fits in at the base of the claws. These bristles partake somewhat of the nature of squamulæ by being dilated in the shape of a lancet. I have noticed them occasionally to be bifid at the apex, but I do not think that they are so always.

56. BEMBIDIUM *triangulare.* N.

B. oblongum, depressum, testaceum capite brunneo, elytris sutura fasciaque lata transversali media nigris, pedibus, palpis antennisque pallide testaceis his medio fuscescentibus; long. corp. 1 lin.

Præcedenti affine, ejus capite, thorace et tarsis, differt thorace linea basali punctata, infra lineam vix strigoso; elytris utrinque profunde 6-punctato-striatis, striis apicem marginemque versus sensim obsoletis, ante medium in stria 4ª puncto impresso, stria inframarginali abbreviata et impressione semicirculari apicali ut in præcedente.

Variat colore obscuriore.

In prov. occid. communissimum.

Very closely allied to the preceding species, however easily distinguished by size, color, which is generally lighter than that of the former, and the deeply striated elytra; the insect is, moreover, more common than the former. The prevailing color of the elytra is not as in the preceding species black, but it is that of the rest of the body yellowish, with merely a black suture and black belt across the middle, the edges of this belt are washed together with the color of the adjoining parts. The semicircular impression at the apex of the elytra is the same as in the former, and forms with the abbreviated inframarginal stria, which is also the same, a triangular figure, tip down, base open, whence I have derived the name. The head with the antennæ, the tarsi, etc. are those of the former, as I have said above.

57. BEMBIDIUM *Ceylanicum.* N.

B. oblongum, depressum, testaceum, oculis nigris, elytris sæpissime

fascia media transversali fusca obsoletissima, pedibus, palpis antennisque pallide testaceis; long. corp. $\frac{3}{4}$ lin.

Præcedenti simile, ejus capite, thorace et tarsis, facillime tamen distinguendum antennis apicem versus incrassatis articulis magis magisque ovatis, art. 2° sequente longiore, 3-4 subæqualibus subcylindricis, reliquis ovatis; thorace, linea basali fortiter punctata excepta, basi lævi; elytris utrinque juxta suturam leviter 3-punctato-striatis, striis reliquis et his basi apiceque sensim obsoletis, ante et infra medium ad striam 3m puncto pilifero impressis, impressione semicirculari apicali ut in præcedente sed stria inframarginali non abbreviata.

In prov. occid. communissimum.

Easily distinguished from the former, to which it is allied, by size, color and the incrassated antennæ. The elytra, moreover, shew only three distinct striæ on either side of the suture, two more, however, being justtraceable. They are obsolete at the base, apex and towards the margin. Within the latter there is an additional deep stria, entire, and not as in the preceding two species only from the middle to the apex. The semicircular impression of the apex, however, is the same, so are the tarsi, etc.

58. Bembidium *Klugii.* N.

B. ovatum, convexum, æneum, elytris maculis 2 subapicalibus rufo-flavis, subtus piceum, pedibus dilutioribus, tibiis, tarsis antennarumque basi testaceis; long. corp. $1\frac{1}{2}$ lin.

Capite inter oculos longitud. 2-impresso, oculis maximis, antennis art. 2° sequentibus parum breviore, his subæqualibus; thorace transversim ovato, antice posticeque truncato, haud emarginato, basi abrupte angustato quadrato, angulis basalibus profunde foveolatis inter foveis punctis 1-seriatim impresso, linea media longit. subtili diviso; elytris ovatis apicem versus leviter angustatis, utrinque profunde 7-punctato-striatis, basi lævi, striis apicem versus obsoletis, ante apicem inter strias 3-6 macula orbiculari rufo-flava apiceque impressione semicirculari.

In prov. occid. et central., hic usque alt. 3500 ped., non infrequenter legi.

This species ascends from the sea level of the Western Province to an elevation of 3,500 feet in the hills, where I

have not unfrequently met it upon the sandy banks of the Pundhool-Oya, a rocky mountain-stream in the district of Kotmalie. Its robust, ovate, convex shape places it at once into a different division from any of the former. It is of bronze color with two orange colored spots behind, the mouth is brown with the exception of the palpi which, together with joints 1 and 2 of the antennæ, are yellowish, joint 3 of the maxill. palpi, however, is of the general color of the mouth. The labrum is square and entire, the 2nd antennal joint is rather shorter than the rest. The thorax is transversely ovate, that is to say, its greatest width is at the middle, not as in a cordate thorax before it, the foveæ are connected by a series of punctures which gradually deepen towards the centre, the longitud. divisional line is also deeper at the apical extremity than at the other parts. The elytra are impressed with seven deep furrows on either side deeply punctured at the bottom. These furrows decrease in length towards the margin and in depth towards the apex, with the exception, however, of the first on either side which goes straight down to the apex. At the latter comparatively smooth place is the semicircular impression noticed in the three preceding and to be noticed in all the following species. The base of the elytra is smooth. There are no traces of punctures, such as are usual in the region of the 3rd or 4th interstice, observable. The lower side of the insect is of pitch color, the basal part of the legs and the thighs are lighter and the tibiæ and tarsi quite so.

59. BEMBIDIUM *ebeninum*. N.

B. ovatum, convexum, nigrum elytris ante apicem maculis 2 rufo-flavis, subtus piceum, pedibus palpis antennisque testaceis, his apicem versus obscurioribus, reliquis oris partibus brunneis; long. corp. 1½ lin.

Præcedenti affine, ejus capite et thorace, facillime tamen distinguendum præter colorem antennis fortius filiformibus, elytris lævibus juxta suturam utrinque 2-striatis, striis basi abbreviatis, externa apicem versus

obsoleta, ante et infra medium leviter foveolatis, ante apicem macula ovata rufo-flava, infra marginem stria profunda apiceque semicirculariter impressis.

In prov. occid. non rarum.

Very closely allied to the former and equally pretty. Head and thorax entirely those of the former, the antennæ, however, are more filiform and the divisional line of the thorax is not deepened at the apical extremity. The elytra are smooth, with only two striæ along the suture on either side, the rest not being even traceable, both these striæ are abbreviated at the base and the outer one becomes obsolete towards the apex, the inner one, however, goes fully down to the apex and falls in with a deep inframarginal furrow which is wanting in the preceding species; before and beyond the middle is a small impression, before the apex are two oval spots of orange color, the apex has the semicircular impression noticed in the preceding species.

60. Bembidium. *orientale.* N.

B. fortiter ovatum, convexum, æneum elytris maculis 4 magnis flavis apice sordide subtestaceis, subtus piceum abdomine brunneo, pedibus, antennarum basi palpisque pallide testaceis; long. corp. $1\frac{1}{4}$ lin.

Capite inter oculos longitud. 2-impresso, oculis maximis, antennis, art. 3-4 subæqualibus, 2° his vix breviore; thorace transverso leviter ovato, antice posticeque truncato, haud emarginato, leviter angustato, basi quadrato, 2-foveolato, inter foveis punctis 1-seriatim impressis, linea longit. media diviso; elytris ovatis apicem versus fortius angustatis, utrinque profunde 7-striatis, basi lævi, striis marginem apicemque versus magis magisque obsoletis, in stria 3a ante et infra medium puncto impressis, infra humeros inter striam 5m et marginem macula ovata, ante apicem inter striam 2m et marginem macula obliqua flava, apice sordide obsoleteque testaceis, hic semicirculariter et infra marginem stria profunda impressis.

In prov. occid commune.

Easily distinguished by its strongly oval shape, the thorax

being hardly contracted at the base and no doubt belonging to a different sub-genus from the preceding and the following. The head is quite that of B. Klugii. The antennæ have the 2nd joint hardly shorter than the 3rd and this and the following subequal, joints 1-4 are of light yellowish, the rest of brown color, joint 3 of the maxill. palpi is of dark, the remaining ones and the labial palpi of pale yellowish color. The labrum is square, entire and with the rest of the mouth brown. The mandibles are furnished with 3-4 small teeth below the middle. The ligula is broader than in any of the other species. The thorax, besides in shape, is distinguished by having the foveæ removed from the basal angles towards the centre. The elytra are impressed with seven distinct striæ on either side, the first of which runs down to the apex where it falls in with the inframarginal one, the rest decrease in length towards the margin and in depth towards the apex, beyond the 7th another one is just traceable, beyond this there is a deep inframarginal one. The apex is impressed with the semicircular figure which distinguishes all the species here enumerated, with the exception of B. opulentum and truncatum. The color of the insect is a dark bright metallic green variegated with four large yellow spots on the elytra; two of these are near the shoulder and of oval shape, the other two near the apex and oblique, the apex is of a dirty yellowish color. The lower part of the insect is of pitch color, lighter towards the apex, the legs are yellowish, darker towards the base.

61. Bembidium *emarginatum*. N.

B. ovatum, convexum, piceum, capite dilutiore, elytris ante apicem maculis 2 rufo-flavis, subtus brunneum, pedibus, antennarum basi palpisque testaceis; long. corp. 1 lin.

Capite antice fortius acuminato, fronte utrinque profunde pluries sulcata, oculis mediocribus prominulis, *labro profunde subangulate emarginato*, antennis art. longitudine subæquali; thorace breviter cordato

antice posticeque truncato, non emarginato, basi quadrato, foveis basalibus lineaque longit. media fere obsoletis, linea basali latitud. tamen distincta; elytris ovatis juxta suturam utrinque 2-striatis, stria externa basi apiceque abbreviata, ante et infra medium puncto obsoleto impressis, ante apicem macula orbiculari rufo-flava apiceque sordide obsoleteque testaceis, hic semilunariter et infra marginem stria profunda impressis.

Variat colore dilutiore.

In prov. occid. rarum.

This and the two remaining species are allied amongst each other, and probably belong to the subg. Lopha. However, I am less sure of this with regard to the present species than with regard to the two following.

The head is pointed in front, and the labrum, an unusual occurrence, deeply notched, two deep furrows run from the clypeus straight across the forehead to the vertex, and from their base other smaller ones radiate towards the eyes. Joints 2-5 of the antennæ, which, in almost all cases, are of unequal length, are not so in the present; the first two or three joints are yellowish, the rest are brown. Joint 3 of the max. palpi is dark, the remaining ones and the labial palpi yellowish. The elytra are impressed with two striæ on either side of the suture, the remaining ones are just traceable. The one next to the suture goes straight down to the apex, where it falls in with a deep inframarginal furrow; the 2nd is as usual, abbreviated. The apex is impressed with the semicircular figure, and there are two punctures on either side.

62. Bembidium *ornatum*. N.

B. ovatum, subconvexum, brunneum, elytris maculis 4 flavis, pedibus, antennis palpisque pallide testaceis, long. corp. 1 lin.

Præcedenti simile, prætercolorem facillime tamen distinguendum corpore graciliore, fronte utrinque 2-sulcata, labro integro, elytris infra humeros et infra marginem utrinque macula orbiculari flava, punctis nullis.

Variat colore obscuriore et dilutiore et sæpius apice sordide testaceo.

In prov. occid. commune.

Easily distinguished from the preceding species with which it agrees in all other respects, no striæ are, however, traceable upon the elytra between the two near the suture and the inframarginal furrow.

63. Bembidium *scydmænoides*. N.

B. ovatum, convexum, obscure brunneum, elytris maculis 4 magis minusve obsoletis dilutioribus, pedibus, palpis antennarumque art. 2 primis testaceis, his apice reliquisque obscurioribus; long. corp. 1 lin.

Præcedenti simile, corpore robustiore, fortius ovato magisque convexo, thorace basi fortius quadrato facillime distinguendum.

In prov. occid. communissimum.

## VIII. Megaristerus. *n. g.* N. *Fam.* Carabidæ, *trib.* Harpalidæ.

Corpus oblongum, depressum, glabrum. Caput mediocre antice obtusum. Mentum profunde subquadrate emarginatum, edentatum, lobis extus rotundatis apice acuminatis. Ligula minima oblonga, paraglossis magnis connatis eam totam amplectentibus antice rotundatis subcordate emarginatis. Palpi maxill. art. ultimo subcylindrico apice magis minusve angustato truncato, lab. eodem obovato truncato. Labrum transversum antice posticeque angustatum, margine anteriore profundius emarginato setoso. Clypeus emarginatus. Mandibulæ validæ trigonæ apice leviter arcuatæ, dextera mediocri labro obtecta apice acuminata medio 1-dentata, sinistra robustiore porrecta (hinc n. g. Megaristerus) apice obtusa medio 2-dentata. Antennæ humeros parum superantes, filiformes, art. 2° sequente parum breviore, reliquis subæqualibus. Thorax rotundato-cordatus, postice angustatus angulis rotundatis, antice leviter emarginatus angulis distinctis. Elytra parallela apice rotundata. Pedes ut in g. Acupalpo tarsis maris 4 ant. tamen art. 1° subtus nudo.

Victus Harpalorum.

Apparently closely allied to Amblystomus, differing, however, in the sculpture of the tarsi, the antennæ, labrum and palpi, and as in the diagnosis as given by Lacordaire in his g. d. Col. the paraglossæ of Amblystomus are simply said to be rounded in front, a further distinction would appear to reside

in the notch which exists in that part of the paraglossæ of my g. Megaristerus. Also allied to Acupalpus the sculpture of the tarsi being exactly the same; in saying which I bear particularly in mind that the intermediate ones of the male are hardly dilated. From this g. however, it is effectually distinguished by the shape of the ligula. From both Amblystomus and Acupalpus, the present g. moreover differs in the *vesture* of the four ant. tarsi of the male, *the first joint being naked below,* and in the mandibles the left one of which is much larger and plumper than the right one, protruding from under the labrum, whilst the latter is hidden by it, the former is at the same time obtuse at the apex whilst the latter is pointed. In the M. Indicus this peculiar construction is hardly striking, but in the other two species it is *very much so,* and imparts a curious appearance to the head of the insect.

64. MEGARISTERUS *mandibularis.* N.

M. piceo-niger leviter metallescens, subtus brunneus, antennis, tibiis tarsisque testaceis, ore brunneo; long. corp. 1½-2 lin.

Capite inter antennas 2-foveolato, mandibula sinistra robustissima porrecta, dextera mediocri labro obtecta; thorace basi 2-foveolato, linea longitud. utrinque abbreviata media diviso, antice lunate impresso; scutello majore; elytris obsolete striatis, striis juxta suturam distinctioribus, cum thorace parce subtiliterque punctulatis, inter med. et apic. ad striam $2^m$ puncto impresso.

Prope Colombo rarus.

65. MEGARISTERUS *stenolophoides.* N.

M. brunneo-piceus elytris obscurioribus metallescentibus maculis 4 flavis, margine suturæque apice brunneis, pedibus, antennarum basi palporumque apice pallide testaceis, ore, mandibulis brunneis exceptis, testaceo; long. corp. 1½ lin.

Præcedenti similis corpore robustiore minus depresso et colore facile tamen distinguendus. Differt præterea palpis max. art. $4^o$ minus distincte, lab. eodem fortius truncato; thorace magis transverso basi ob-

solete ruguloso; elytris profundius striatis, puncto ad striam 2m fere obsoleto, cum thorace haud punctulatis, maculis 4 subobliquis flavis: 2 humeralibus in interstitiis 5-6, 2 subapicalibus in interstitiis 3-4.

Prope Colombo rarus.

### 66. MEGARISTERUS *Indicus.* N.

M. obscure viridi-æneus elytris maculis 2 humeralibus obliquis pustulisque 2 subapicalibus flavis, subtus brunneus tibiis tarsisque testaceis, antennarum basi oreque brunneo-testaceis; long. corp. 1½ lin.

Differt a M. mandibulari mandibula sinistra altera vix robustiore, elytris infra humeros inter marginem et striam 2m macula obliqua intus angustata ante apicem in interstitio 3o postula parva flavis, apice fortius quam in præcedente rotundatis.

Prope Colombo mihi, Maderaspatani a Dam. Hon. W. Elliot specimina nonnulla nocte at lumen capta.

## IX. SPATHINUS *n. g.* N. *Fam.* CARABIDÆ, *trib.* POGONIDÆ.

Corpus obovatum, subconvexum, glabrum. Caput mediocre antice trigonum, oculis magnis semiglobosis prominulis, collo brevi. Mentum transversum profunde quadrate emarginatum, dente sat forti acuto, lobis intus inter med. et apicem leviter oblique truncatis, extus rotundatis, apice acuminatis. Ligula minuta elongata, paraglossis latis connatis eam haud multo superantibus apice intus oblique truncatis subacuminatis. Palpi art. ultimo conico acuminato, max. art. 3o inverto ultimo æquali, lab. eodem robustiore. Labrum quadratum antice profunde emarginatum angulis ant. rotundatis. Mandibulæ porrectæ trigonæ apice acuminatæ basi dentatæ. Antennæ sat robustæ humeros parum superantes art. 2-3 subæqualibus subcylindricis sequentibus brevioribus, his subæqualibus, obovatis. Thorax transverse subquadratus antice lateribus leviter rotundatus, postice parum angustatus, basi leviter rotundatus, angulis subrectis. Elytra ovata apice rotundata. Pedes anteriores tibiis profunde emarginatis, tarsis maris art. 1-3 leviter dilatatis subtus squamulis munitis, art. 1o subcylindrico 2-3 subrotundatis, 4o subtrigono, unguiculis simplicibus.

Victus Bembidiorum.

Apparently closely allied to Trechus and an aberrant form

of the same tribe to which the latter g. belongs. The mentum and palpi appear to agree entirely, the insects differ, however, in the structure of the ligula (which in Spathinus is entirely that of a Bembidium) and the sculpture and vesture of the ant. male tarsi. In spite of the latter anomalies, the pre-eminently characteristic shape of the palpi convinces me that the insect must find a place where I have put it. It is also closely allied to my g. Ochthephilus, differing from it, however, in the ligula, palpi and labrum. The g. name "Spathinus" signifies a staggard, and I have chosen it with regard to the shape of the terminal joint of the palpi. The insects are common throughout the South-west and West of the Island, where they live in the manner of the Bembidia, under decaying vegetable matter, upon the banks of lakes and rivers, &c.

67. SPATHINUS *nigriceps.* N.

S. Alatus, tenuiter hirsutus, brunneo-testaceus capite nigro, elytris apice fuscis, ore, antennis pedibusque testaceis ; long. corp. $1\frac{1}{2}$ lin.

Capite inter antennas profundius 2-foveolatus, fronte medio leviter depressa ; thorace lævi linea longit. media diviso ; elytris juxta suturam obsolete striatis.

68. EUPLYNES *Dohrnii.* N.

E. ovatus, subconvexus, rufo-testaceus, oculis nigris, elytris viridibus, femoribus apice tarsisque geniculis fuscescentibus ; long. corp. vix $4\frac{1}{2}$ lin.

Capite inter antennas bifoveolato ; antennis art. 2o brevi, reliquis subæqualibus ; palpis art. ultimo subelliptico truncato, labialibus elongatis ; thorace breviter transversim cordato antice posticeque truncato, longitudine sesqui latiore, depresso, lateribus basique elevato, hic leviter bifoveolato, angulis basalibus subrectis leviter rotundatis, linea med. longitud. diviso, subtiliter transversim ruguloso ; elytris ovatis leviter dilatatis thorace duplo fere latioribus, striatis, in regione basali in stria 3a., ad et infra medium in stria 2a puncto impressis, in regione media utrinque depressis ante apicem leviter angustatis et sinuatis, apice

levisseim transversim truncatis angulo interno in spinam producto; pedibus tibiis fortiter tarsisque 4 posticis dorso modice costatis.

In campis silvisque prov. occid. et in montibus prov. central. usque alt. 4000 ped. sub vegetab. per occasionem copiose legi.

This insect frequents localities of a very different nature: I have taken it in great abundance in the Negombo district in hot, sandy fields under heaps of weeds, &c., but I have also taken it on the banks of the Colombo lake, and in the damp forests of Pusilawa, 4,000 feet above the sea, under fallen trees; its favourite haunt, however, appears to be the former description of locality. It would appear to be very distinct from the E. cyanipennis described by Schmidt-Gœbel in his "Col. Birm." in thorax, sculpture of apical part and position of punctures of elytra, costated 4 post. tarsi, &c. On the other hand the curious depression of the elytra, which has much the appearance of being accidental, is the same. (It occurs also in my g. Anchista.) I am not quite satisfied with the description of the ligula and tarsi as given by Sch.-G. The former I should call "truncated at the apex, anterior angles strongly rounded off." In the insect before me it is certainly not rounded in the middle—if anything, it is rather the contrary. The tarsi I should describe thus:—"Joints 1—4 of two ant. male tarsi dilated, joint 1 nearly as long as the two following together, sub-cylindric, joint 2 nearly as long again as the following, elongate-trigone, joint 3 subtrigone, joint 4 (in all tarsi) bilobed, joints 1-3 furnished below with two series of lamellated papillæ fenced in by bristles, joint 4 densely penicillated; claws simple."

I take this opportunity to add a general remark: The author above quoted at the end of the description of his E. cyanipennis, quotes a passage from Helfer's Burmese Journal, implying "that the species lived exclusively upon trees, and *that most of the Carabidæ of that country had the same habit.*" The latter part of this observation I feel in-

clined to look upon as a rash and unjustifiable assertion on the part of Helfer. There can be little doubt (and the above is an additional example) that the Carabidæ of this Island have much resemblance to those of Burmah, still my long experience in it has not furnished me with any instances of any of them living *upon* trees, with the exception of the Tricondylæ, Collyres and certain Cicindelæ. The Casnoniæ and Ophioneæ are in the habit of ascending grasses and low herbs, and certain Lebiidæ and g. Catascopus live under the bark of trees—this is all. As to the insect described above, although it appears to adapt itself with facility to a variety of physical circumstances, and although it takes occasionally to its wings and flies into houses in the evening, I have never found it *upon trees.*

*Description of New and Little known Species of Ceylon Nudibranchiate Molluscs, and Zoophytes.* By E. F. Kelaart, M. D., *Staff Surgeon; F. L. S., Honorary Member of the Royal Dublin Society, &c. &c.*

---

Having, in the course of my Military service, been now for the third time stationed in Trincomalie, in Medical charge of the European Troops in that Garrison, and still finding that there is nothing like the careful study of God's works, to divert the mind from the contemplation of diseased organic bodies, especially in this unhealthy and monotonous station, I have again resumed the researches of my leisure hours, which never fail to draw from me an earnest prayer that my health may be spared long enough to conclude these labours in this and other parts of the Island.

A recent visit to England made me acquainted with the value of the aquarium, and with the interesting researches of Messrs. Alder and Handcock, of Gosse, Johnson, and others, among the soft, gelatinous, marine animals found in European seas, which have been so much neglected by Indian Naturalists, owing to the difficulty either of observing their natural habits, or of preserving their forms. The curiosity thus excited was immediately increased, when, after several years absence, I was again in sight of the magnificent harbour and bays of Trincomalie. While some of my Ceylon friends contemplated my return to Trincomalie as a great evil, I became reconciled to my destination from an inward feeling, and I hope not an unworthy one, that I was again sent here, for a good and useful purpose. It is now nearly two years

since I returned to Ceylon, and I have every reason to feel thankful, that my residence in Trincomalie has enabled me to prosecute researches in more than one unexplored field of Natural History. I had for my guide the example of those great and good men, who deign to look upon even my labours as worthy of encouragement, and who do not consider the pursuit of the Naturalist as incompatible with the duties of a Military Surgeon. Dr. Johnson, himself a successful Medical practitioner and zealous Naturalist, (in his celebrated work on British Zoophytes,) observes, in his remarks on Doctors who are also Naturalists, that "that very activity of mind and perspicacity which originated and upheld their sagacity and success as practitioners, were sure to carry them far in whatever side-path the natural bent of their taste led them, for the occupation and entertainment of the leisure hours which the *busiest must have, or may create. Idleness has no leisure.* * * * There never was a time when it was necessary to vindicate, to any but the ignorant, the erratic excursions of medical men into the fields of science and literature, for assuredly the rank which the profession, as a body, has taken and holds in public estimation, depends for its patent, in part at least, on the scientific and literary character of its professors; and by continuing to support that character they will best secure it from the vulgarity of a common mercature, or the selfishness of a venal quackery."

My earliest researches, since my return to Ceylon, were directed (with the aid of the microscope) to those minute forms of animal and vegetable life called animalculæ, and Diotomaceæ. I have already communicated to another channel the observations I have made among these interesting microscopical creatures, found in fresh and sea water. In this paper, I propose to communicate to the Ceylon Branch of the Royal Asiatic Society, my researches among some of the least known, but most interesting, species of marine animals.

Finding that scarcely anything is known of the many naked Molluscs of this part of the Indian Ocean, I have availed myself of the present favorable opportunity offered by the Ceylon Government, for the investigation of the Natural History of the Pearl Oysters, to extend my researches also to a numerous family of Mollusca inhabiting these seas, which though not productive of pearly gems, or affording specimens for cabinet collections of Conchologists, or of amateur collectors, have attracted considerable attention in Europe, more especially since the publication of the splendid work of Alder and Handcock on the British Nudibranchiata.

The marine shells of Ceylon have long been known to the Naturalist, and they are also familiar to many in Ceylon, but the soft sea nymphs, or slugs, whose perishable charms often rival the more lasting beauties of the finest shell, had scarcely ever been noticed by any Naturalist or friend in the Island, till I had placed these creatures in the Vivarium. They have not only afforded amusement and instruction to myself, but, I hope, to others also, who have frequently seen these interesting creatures in their new homes. I must confess that some of my visitors were disappointed at the slimy nature of these animals, and failed to appreciate the beauty of many of my pet specimens; others, however, more alive to the beautiful, and to the wonderful works of God, did not despise the sea-born slugs, because they were so snail-like in appearance, and, like the land slugs, destitute of shells. Even the native shell divers, who procured me most of the living specimens, expressed their astonishment at the newly unfolded beauties of these Atta,* or slugs, which they found crawling on rocks and sea weeds; but it was not till the full formed Doris, or the sweet little Eolis, expanded their tentacles and plumose gills in the glass Vivarium, that these "men who go down to the deep" became aware, that the creatures which

* Tamul for sea slugs.

they so much despise are among the most elegant objects of the sea, and that, although a shell will preserve its colour for an almost indefinite period, the rich and variegated colours of these semi-gelatinous creatures, though shorter lived, are not less charming, or less worthy of admiration. It may, therefore, be hoped, that the interest recently created will continue to be attached to the naked Mollusca of Ceylon, and that, in a few years, they will be as well known to the Naturalist, as the European species. Although it may be long before we shall find an Alder or a Handcock to pourtray gracefully, and faithfully record their characters and habits, still it will always be gratifying for me to feel, that I was the pioneer to the labours of others more competent to do justice to the Ceylon *Nudibranchiata.*

It has always been my endeavour, though, I must own, often unsuccessfully, to describe in familiar language to my friends in Ceylon, the Natural History of animals found in the Island, and therefore, if I have not attained this object in the following pages, it will not be from the want of a wish to impart to others some of the pleasure I have derived in such congenial pursuits, or from the absence of a desire to be amusing as well as instructive.

Popular accounts of the Natural History of a country generally follow a scientific one. But I shall endeavour to combine both in one communication, for I cannot but suppose that, among many inquirers, there will be found even a few who are anxious to dive deeper into the characters of an animal than its colour or form. Having this object in view, I cannot introduce the following descriptions of sea slugs, or sea nymphs, by a more intelligible and useful preface, than an abridged description of the Anatomy and Physiology of the Class Nudibranchiata, given in the English Cyclopædia; promising, in the course of my own descriptive account of the species found in Trincomalie, to detail faithfully their habits and characters.

## NUDIBRANCHIATA.

A family of Gasteropodous Mollusca, characterized by the possession of distinct, external and uncovered gills. The species of the family are all marine, and with few exceptions small in size. They are sometimes, with other forms of animals, called sea-slugs, arising from the fact that, like land slugs, they are destitute of shells. Their body is usually elongated and soft, and attached throughout its whole length to the foot, or disc, upon which they crawl. They are not unfrequently covered with a cloak, which in some is strengthened with calcareous spicula. The head is anterior, and frequently indistinct, having one or two pairs of tentacles, the upper pair of which are placed on the cloak when it is present, and behind them the eyes are situated. But the characteristic peculiarity of these molluscs is the appendages that constitute their breathing organs, placed upon the back, always symmetrically, in plumes, tufts or papillæ, either forming a circle on the central line, or arranged in rows upon the sides.

None of the Nudibranchiate *Mollusca* appear to have been known to the ancients, and even up to the time of Linnæus they remained, with one or two rare exceptions, entirely unnoticed. It was not until the appearance of the celebrated "*Memoires*" of Cuvier, in the Annales du Museum, that much attention was drawn to this subject. Since then, Lamarck and Blainville contributed something to the knowledge of their physiology and relations, but not much to the number of species.

Although little had been done up to this time by British Naturalists in augmenting the species of this beautiful family, they have been, since, the subjects of most accurate and fruitful research; and the Monograph now publishing by the Ray Society, on the "British Nudibranchiate Mollusca," may be regarded as one of the most remarkable contributions made to the literature of Natural History during the present century.—Continental naturalists have also added several new European species during the last half century.

With the imperfect knowledge of foreign species that we yet possess, it is scarcely possible to arrive at any satisfactory conclusion concerning the general distribution of the *Nudibranchiata* in the different regions of the globe. The tropical forms are, as usual, larger and more brilliantly coloured than those of colder climates, but the notices of extra European species are so scanty, that we cannot form any idea of their numerical preponderance. * * * * It cannot be doubted that a great deal of the apparent deficiency of other genera, in comparison with the Dorididæ, in foreign countries, arises from the want of proper examination, and from the little attention paid by collectors to the less conspicuous forms.*

In 1841, the celebrated Naturalist, M. Sars, announced the discovery, that these little creatures undergo a metamorphosis, having on their

* Having paid this attention to "less conspicuous forms," I am enabled to add considerably to several genera.—E. F. K.

extrusion from the egg a very different form and character from those which they are afterwards destined to assume. In this first stage of their existence, they have the appearance of small animalcules, swimming freely through the water by means of two ciliated lobes, and have their body covered by a nautiloid shell furnished with an operculum. Up to that time nothing approaching to a distinct metamorphosis had been known to exist in any of the true Molluscs.

The Nudibranchiata exhibit a high state of organization. They are all provided with a powerful muscular buccal apparatus, which has, in some instances, appended to it a gizzard. The oral aperture is guarded by fleshy lips, and the mouth is furnished with a tongue, bearing a spiny prehensile membrane, and occasionally with lateral corneous jaws.

The œsophagus, stomach, and intestines are well marked; the former is generally short, and passes from the upper surface of the buccal mass. The stomach is frequently buried in the liver. The intestine is always short.

The liver presents two great types of form. In the Dorididæ and Tritonidæ it is entire (excepting in Scylleæ, where it is broken up into 6 or 7 globular masses,) occupying its normal abdominal position; in the Eolididæ it is more or less diffused.

All the Nudibranchs are hermaphrodites, each individual being furnished with male, female, and androgynous parts. These organs, taken together, are very bulky, and occupy the greater portion of the abdominal cavity. They communicate with a common vestibule, opening upon a nipple-like process on the right side of the body, and always below the mantle, when it is present.

The organs of circulation and respiration consist of central organs of propulsion,—a systematic and portal heart,—arteries, veins, and sinuses or lacunes; and of laminated, branched, or papillose branchiæ; arranged either on the medial line, or along the sides of the back. The flow of blood is rapid; the pulsations of the heart varying, in the different species, from 50 to 100 in the minute.

The nervous system presents a high degree of concentration, perhaps higher than in any other group of Mollusca,—and is divided into two very distinct portions;—one, the cephalic or excito-motor; the second, the splanchnic or sympathetic; these two portions intercommunicate at several points.

All the Nudibranchs are provided with auditory capsules. Eyes are also universally present. The dorsal tentacles are the organs of smell, and, judging from their great development, this sense must be more acute in most of the Nudibranchs than it is in any other mollusc, with the exception perhaps of *Nautilus*. Touch undoubtedly resides everywhere in the skin, but is specialised in the oral tentacles and parts about the mouth. The lips and channel of the mouth are probably the seat of taste.

Their tenacity of life, when kept in confinement, varies much in the different species, but is greater than in many other marine animals.

Though patient and long-suffering in the endurance of hunger, they are very voracious. The greater number of them are carnivorous; living principally upon Zoophytes and Sponges. The Eolides do not scruple occasionally to devour the weaker among their own brethren.—*Abridged from English Cyclopædia.*

Hoping that the foregoing anatomical and physiological account of the *Nudibranchiata*, will draw more than ordinary attention to this family of marine creatures (found on almost every rock and sea weed), I shall proceed to give a descriptive account of upwards of a hundred species of marine-animals, including Sea-anemones and Planaria, found in the harbour, bays, and coves of Trincomalie. I cannot but regret, that not having with me Ruppel and Ehrenberg's work on species found in the Red Sea, I am not able to speak positively of *all* those herein described as being new to science. Some may, perhaps, have already been described by earlier observers, which, if ascertained to be the case, I shall only be too glad to take the earliest opportunity of acknowledging.

In concluding these prefatory remarks, I have to express my personal obligations to those authorities who have retained my military services in Ceylon, thereby enabling me to resume my Zoological labours, which were precipitately and unexpectedly shortened by my removal from the Island.

*Trincomalie,*

1*st November*, 1857.

# CEYLON NUDIBRANCHIATE MOLLUSCA.

## (NAKED MOLLUSCS.)

---

Sub-Kingdom. MOLLUSCA.

Class. GASTEROPODA.

Order. NUDIBRANCHIATA.

Fam. DORIDIDÆ.

Branchial plumes surrounding the vent on the medio-dorsal line.

Sub-Family. DORIDINÆ. With a cloak.

Genus. DORIS. *Linnæus.*

Animal oblong, covered by a mantle; four tentacles, two superior or dorsal, clavate or conical, retractile within cavities, sometimes slightly sheathed. The two inferior or oral tentacles placed on each side of the mouth, they are sometimes absent or replaced by flat appendages; eye specks immersed behind the dorsal tentacles, not always visible in the adult; lingual membrane with numerous lateral teeth; rachis often edentulous; stomach simple; liver compact; skin strengthened with spicula, more or less definitely arranged.

---

### DORIS GLORIOSA. *Kel.* √

*Synonym.* Doris marginata? *Leuckart.*

Body nearly three inches long; oblong, of a pinkish colour minutely dotted with red and white. Mantle large, oval, broad, when expanded entirely covering the foot. Back mottled with pink, red, and yellow, and minutely punctulated with red and yellow; edged broadly with white, then by a

rich broad red line; adjoining this is a whitish space, and carried round the mantle, near the body, is a still more brilliant blood red line, with internal club-shaped prolongations of the same beautiful purple red colour. Interspace and for about $\frac{1}{4}$ inch of breadth of the back, the mantle is again whitish, with shades of purple and yellow nearer the beautifully mottled back. The underside of mantle has also a broad white edge, the rest brilliantly variegated with dotted purple, yellow, and red splashes. Branchiæ 7 or 8, large, branched; each rising from a separate cavity in a circle about half an inch from a protruding yellow coloured anal orifice. Plumes roseus, with red midribs. Dorsal tentacles large, clavate; apex pointed, slightly truncated, on inner edge laminated; colour pinkish and spotted yellow; ridge of cavity spotted with yellow and red. Head large, protruding nearly $\frac{3}{4}$ inch from mantle. Mouth near foot, situated in the centre of an oval projection, and on each side is a long broad toothed leaflet or oral appendage, red and dotted like the head. Foot long, broad, with parallel sides, rounded and transversely split in front. It has a broad lemon coloured edge with transverse striæ; the rest pinkish red, not spotted; a dark purple spot in centre given by the internal viscera.

This is by far the most beautiful species of Doris or Sea nymph I have ever seen, and none but a good artist could do justice to its resplendent beauties. The large ample surface of the mantle, with its soft, snowy white undulating edge, is best seen when the animal is swimming, and reflecting in the water the rich red folds near the golden speckled back, on which is placed a broad circle of rosy coloured feathery tufts. The live specimen, of which the above is but a faint description, was found under corals in low water near Fort Frederick. In another specimen from the same locality, the white edge of the mantle was replaced by a rich crimson red, which coalesced with the inner red line, leaving a faint white

line. Indeed, it is a question, which of the two varieties looked more beautiful; at night, however, the palm of beauty was awarded to the red margined specimen. They both lived for some days in a vivarium. When at rest, the mantle was turned inwards towards the back; in this position the white and red lines were hidden by the broad rolls on each side, displaying the rich profusion of red and yellow dotted splashes and undulating lines of the under surface of the mantle. In fact, it then looked like another species, but it is only when the mantle is fully expanded and floating on the water, that the unrivalled charms of this beautiful sea-nymph is seen to perfection. In the young, the mantle extends round the head, and may be mistaken for a distinct species. I have not had an opportunity of seeing the spawn of this species.

If this splendidly coloured sea nymph is identical with Leuckart's species, found in the Red Sea, and named *Doris marginata*, I should still prefer retaining the name I have given it, as "*Marginata*" would apply, equally as well, to several other species as to this.

## Doris MacCarthyi. *Kel.*

Body nearly 2½ inches long; dusky grey. Mantle long, narrow, dusky grey; bordered with a bright blue line; edge crenulated, wavy. Dorsal tentacles long, conical, obtusely pointed; laminated obliquely, for nearly ⅔ of its length; of a pale blue colour with white streaks. Oral tentacles white, short, broad and rounded. Branchial plumes 12 to 15; irregular, most of them of unequal length; pinnated, and a few trifurcated; others have a small cluster of plumes rising from the middle or extremity. Foot white, and nearly as long as the mantle.

This curious, but elegant species is semi-gelatinous; and resembles a *Goniodoris* from its narrow mantle, which scarcely covers the foot; the body is almost exposed.

I have dedicated this beautiful species to one who has always encouraged my pursuits in the field of Natural History. To Sir Charles MacCarthy, the Colonial Secretary of Ceylon, I feel grateful for that assistance which his position in the Island enabled him to give me, whenever required; and I also feel thankful to him for the warm interest he has taken in my employment as Naturalist to investigate the Natural History of the Pearl Oysters, which has so abruptly been brought to a conclusion by my professional services being required in another part of Her Majesty's dominions,—the rebel polluted land of India.

### Doris Cœlestis. *Kel.*

Body white, $2\frac{3}{4}$ inches long; flattened. Mantle coriaceous, white, clouded with dark purple minute rings, confluent or continuous with lighter coloured purple rings, set more widely apart. Dorsal tentacles white, long; apex clavate, lamellated, slightly truncated on the superior edge; pale green, tipped with orange; margin of sheath orange or golden. Oral tentacles long, acutely pointed; white minutely speckled purple. Branchial plumes 6, long, tripinnated; whitish, ribs purplish brown, edge of cavity orange. Foot white, shorter than mantle; grooved; lower lamella notched.

This beautiful purpled clouded *Doris* is of very retiring habits; scarcely ever seen moving. Obtained in August and September from rocks in Back bay. Ova white, in 3 or 4 broad coils.

### Doris Funebris. *Kel.*

Body nearly $1\frac{3}{4}$ inch long; oblong, convex; of a waxy

white colour, and spotted black. Mantle coriaceous, granular; of an ivory white colour, and ornamented with jet black spotted circles and half rings or imperfect annular spotted figures. Dorsal tentacles large, clavate; apex black, laminated, without sheaths. Oral tentacles linear; white, tip black. Branchial plumes 6, large and drooping, tripinnate; white and shaded lavender grey; midribs of a dark brown colour. Foot waxy white; spotted irregularly on the margin of edges with small and large linear spots.

This elegant funereal looking *Doris* is, with the mantle, about 2¾ inches long, and 1½ broad. Rarely seen. Lives for a long time in the aquarium. Deposits its ova in broad convoluted bands, which, when uncoiled, measure nearly 18 inches in length. A pair kept in the aquarium were seen to spawn in July. While one was depositing the band of ova on the side of the glass globe, the other kept watch, as it were, by moving in a circle round the former. The whole process lasted about half an hour.

The spots and markings of some specimens were of a dark brown colour. In others the spots were of an auburn colour.

### Doris Gleniei. *Kel.* ✓

Semi-gelatinous. Body nearly 1½ inch long. Mantle broad, shorter than foot,—above, white, with a pinkish yellow shade; a large irregularly waved deep golden coloured patch on the back, bordered and spotted with purplish red.

The under surface of fore part of mantle, of a beautiful light purple colour. There is also a purple line on each side of the white body. Dorsal tentacles white, with golden coloured laminæ; long, conical and pointed. Oral tentacles short, white. Branchial plumes 7 to 9, short, lanceolate, pinnated; white, bordered with golden yellow. Foot pinkish white; edge pure white.

This beautiful species I have named after my friend the Rev. Owen Glenie, Colonial Chaplain of Trincomalie, who was often the cheerful companion of my Zoological pursuits, and who will, I hope, on my departure from the Island, continue those researches which he has so well begun.

This is perhaps next to *Trevelyana Zeylanica* (*n. s.*) and *Doris Gloriosa*, the most remarkably coloured species in Ceylon. Found in the Inner Harbour in deep water, as also at Cottiar, opposite Fort Frederick.

### Doris Leoparda. *Kel.* √

Body $\frac{7}{8}$ inch long, grey spotted. Mantle carneous, granular; grey, and spotted with dark grey and blackish circular spots; the latter in the central parts; each spot composed of smaller spots, separated from each other, by white reticulations, seen more distinctly with the aid of a magnifier. Dorsal tentacles green; large, broad, ovate, lamellated for nearly the whole length. Oral tentacles short, linear, acutely pointed. Branchial plumes 6, grey, speckled with darker grey, all united for nearly half the length; and the other half fringed with short plumes of a light green colour. Foot whitish, speckled; covered by mantle.

This Leopard-spotted Doris is of a regular oval form. Found in Dutch Bay among Coral rocks.—Ova white.

### Doris Amabilis. *Kel.*

Body 4 lines long, oblong, narrow, convex, white, spotted purple on sides. Mantle smooth, white, and spotted with purplish crimson spots; beneath white, not spotted. Dorsal tentacles of moderate length; apex conical, pointed; closely lamellated; of a golden yellow colour. Branchial plumes 5

or 6, small, bi-pinnate; white, with purple spots at their base. All retracted within a cavity, without a rim. Head rounded, spotted purple, on each side of mouth a short linear tentacle, white. Foot narrow, longer than the mantle, slightly expanded in front, spotted purple on the upper surface.

This lovely little Doris is rarely found. Two specimens, obtained in May, are still alive in a finger glass, generally resting on the side of a stone. At night it crawls out of its hiding place and creeps along the sides of the glass, and is sometimes seen floating on the surface of the water on its back. When touched with a feather it adheres by its foot, and can be kept dangling in this position by the aid of the mucous thread secreted by the surface of the foot. Several Eolidæ were kept in the same vessel, and it has survived them all, though attacked repeatedly by the Eolis. Ova white, deposited on side of glass in a thread-like coil.

## DORIS FIDELIS. *Kel.* √

Body $\frac{2}{3}$ inch long; narrow, convex; white. Mantle oblong, with parallel sides; shorter than the foot; of a waxy white colour, the edge lined with red and irregular tooth-like transverse internal prolongations of the same colour; those on sides, longer, alternated with short ones. Branchial plumes 7 or 8, black; lanceolate, pinnated, few branched at tip. Dorsal tentacles oblong, flattened, pointed; apex black, lamellated. Oral tentacles small, acutely pointed. Foot white, narrow, slightly dilated in front, and pointed posteriorly.

Found on coral rocks at low water mark, in August and September. This singularly marked species looks, when the tentacles and branchiæ are retracted, like a large bean. Its jet black plumes and tentacles appear very conspicuous, above

the red margined white mantle. It is very tenacious of life Ova deposited in narrow white coils.

### Doris Preciosa. *Kel.*

Body white, $\frac{2}{3}$ inch long. Mantle pale greenish yellow, very light coloured on sides, where there is also a blueish shade; closely speckled with small reddish brown spots; margin marked with a narrow purple red line and a light orange shade. Dorsal tentacles short, with reddish purple apex, clavate, laminated. Oral tentacles triangular, sharp pointed. Branchiæ short, pinnated; reddish purple. Foot white, shorter than mantle.

This gem-like, elegant species, is of the same size as *D. Fidelis*, and not unlike it in appearance. The deep blood red branchial plumes, and the red margined speckled cloak, sufficiently separate it from the last species. They are both found in the same locality, and at the same time. The characters of the young species are also very marked, as in the adult specimens.

### Doris Nivea. *Kel.*

Body $\frac{2}{3}$ inch long, convex, elliptical, snowy white. Mantle coriaceous, granular; white, occasionally seen speckled indistinctly with small grey spots. The purplish coloured viscera seen through the opaline back. Dorsal tentacles pure white, short, conical, pointed slightly, lamellated at tip. Oral tentacles linear. Branchial plumes 6 or 7, white, bipinnate. Foot white, shorter than mantle.

This snowy white opaline *Doris*, is probably only a variety of *Doris pallida* of Leuckart, found by Ruppel in the Red Sea. It has not, however, all its characters; the cloak resembles that of *D. repanda* in some respects. It has white, nerve-

like lines on the margin. I have only seen one specimen, which lived for a few days.

### Doris Marmorata. *Kel.*

Body $2\frac{1}{2}$ inches long, oblong, convex, coriaceous; white, speckled reddish brown. Mantle broad and long, covering the foot; thick, hard, granular; marbled with black and reddish brown, and irregularly spotted white. Under surface white, and mottled with irregular shaped purplish red spots. Branchial plumes 6, united at base, superior half plumose, tripinnated, grey and grizzled with brown. Dorsal tentacles large, clavate, laminated; brown and speckled white. Sheaths granular. Head small; oral tentacles long, linear, acutely pointed. Foot white, deeply notched and grooved in front; spotted reddish brown.

This large marbled Doris lived only for a few days. They are found on rocks near Fort Fredrick at low water mark. Some are of a darker brown colour than others.

### Doris Cerisa. *Kel.*

Body $\frac{1}{3}$ inch long, convex, oval; of a vermillion red colour. Mantle of a cherry red colour, covering the foot. Branchial plumes 6 or 7; very small, straight and stiff; bipinnated; of a crimson red colour. Dorsal tentacles small, conical, lamellated, purplish red; speckled white, tip grey. Oral tentacles indistinctly seen. Foot pinkish.

I have only seen one specimen of this exceedingly pretty species. It lived for several months in a finger glass. It cannot be mistaken for the young of any other Ceylon species herein described. Ova red, in 6 narrow tape-like coils. The ova of *D. rubra* (*mihi*) are white.

### Doris Rufopunctata. *Kel.*

Body ¾ inch long, oval, compressed; of a white colour. Mantle coriaceous; of a light brick red colour, and speckled with circular spots of a darker reddish brown colour. Branchial plumes 5, small, bipinnate; greyish, speckled rufous. Dorsal tentacles short, clavate, pointed, laminated, without sheaths; of a rufous brown colour. Oral tentacles white; linear. Foot whitish; short, grooved and notched in front, speckled rusty. Under part of cloak whitish, and also speckled rusty.

This stiff-looking Doris is occasionally seen in a circular form. Rarely found, among Pearl Oysters: very tenacious of life.

### Doris Grisea. *Kel.*

Body 1½ inch long, gelatinous. Mantle of a dark ashy brown colour, closely speckled with reddish brown and white spots, and two or four longitudinal rows of larger blackish irregular spots. Tentacles clavate, laminated; ashy brown, speckled white. Branchial plumes 5, whitish, speckled grey; tripinnate. Mouth surrounded with a white veil (?) Foot whitish, spotted reddish brown; notched in the fore part; covered entirely by the mantle. Some specimens are more reddish coloured than others. The young are nearly always more ashy coloured.

A very common species, found from March to September in low water, on rocks surrounding Fort Frederick, and also in the Inner Harbour. Lives a long time in the Aquarium. Ova white, in 3 or 4 white coils. This Doris can elongate itself into the shape of a leech.

## Doris Papillosa. *Kel.* √

Body $\frac{3}{4}$ inch long, white, brown spotted. Mantle coriaceous, covered with large papillæ, each rising from a circular tubercular base, or ring. Buff, and spotted dark reddish brown; a row of larger spots round the margin. A dark brown line runs from base of tentacles to branchiæ. Dorsal tentacles large, apex clavate, laminated, of a light green colour, speckled white. Oral tentacles short, linear. Foot whitish and spotted with rusty brown; shorter than mantle. Branchial plumes 6; short, tripinnated. Posterior three plumes rusty coloured; anterior ones whitish.

This species resembles *Doris rufopunctata,* but its green dorsal tentacles, and papillose tubercles on mantle, sufficiently distinguish it from other species. Ova white, laid in 4 narrow waved coils.

## Doris Rubra. *Kel.* √

*Syn.* Doris Solea.? *Cuv.*

Body $1\frac{1}{2}$ inch long, oblong, pellucid red, Mantle crimson red, and maculated with irregularly shaped dark brick red or purple spots; those on the back larger. Tentacles large, clavate; apex red, laminated. Branchiæ six, of a light rose colour; large, tripinnate. The two anterior ones smaller than the rest. Foot oblong, broad, of a pinkish red colour; longer than mantle; rounded in front and transversely grooved; anterior lamina notched in centre. Oral tentacles linear. With mantle extended, nearly three inches.

This beautiful red species is found in great abundance in and out of the harbour of Trincomalie; and is generally seen on mossy rocks a few feet below the surface of the water. When confined in a glass Vivarium, it becomes, at night,

nearly throughout, of a pellucid pinkish white colour, which hue it retains till dawn, when gradually it assumes its brilliant red diurnal costume. Spawns in the months of May and June; ova deposited in 3 or 4 large, white, ribbon-like convolutions.

## Doris Osseosa. *Kel.*

Body one inch long. Mantle hard, cartilaginous, granular and pitted; granules of a whitish colour; on the median line is a narrow ridge extending from base of tentacles to branchial plumes, which are 4 or 5 in number, emerging horizontally from under the posterior termination of dorsal ridge. In some specimens there is a large pitted protuberance on centre of ridge. Dorsal tentacles with large granular sheaths; apex conical, lamellated; of a pale green colour. Oral tentacles white. Foot small, narrow. Branchial plumes small, bipinnated.

This curiously formed *Doris* resembles a piece of bone, or piece of worm eaten white stone. Its habits are those of the other Doridæ.

## Doris Constantia. *Kel.*

Coriaceous. Body $\frac{3}{4}$ inch long; light yellow. Mantle yellowish brown, granular; dark brown spots on edge. Dorsal tentacles yellow, conical, swollen at the apex, laminated; tip produced, white. Oral tentacles small, linear. Branchial plumes whitish, 5 or 6, small, bipinnate. Foot small, covered by the mantle. Under parts yellowish.

I have only seen one of this species, which lived for many months in a Vivarium. It came nightly to one of the Oysters,

and apparently fed on the back of the shells, upon the atoms of life found there.

### Doris Luteola. *Kel.*

Semi-gelatinous. Body $\frac{3}{4}$ inch long. Mantle granular, yellowish, and shaded with darker yellow. Dorsal tentacles long, black, lamellated apex. Oral tentacles short, white. Branchial plumes long, bipinnate; greenish. Foot white, shorter than mantle.

This elegant species is found in shallow water; spawns in October. Ova light green, in 2 narrow tape-like convolutions.

### Doris Viperina. *Kel.*

Body 2 inches long; white. Mantle coriaceous, oval; covered with short spinous tubercles, of a grey colour; and beautifully spotted with dark grey and purplish brown spots having a blueish shade. Under surface of mantle white, with purplish spots, a purplish line runs near the edge; border transversely streaked. Dorsal tentacles, greenish, long, white, slightly truncated, laminated clavate tops. Oral tentacles white; long, pointed. Branchial plumes 6; short, broad, bipinnate; of a greenish white colour. Foot oblong, entirely covered by the broad oval mantle; white, spotted with smaller purplish spots than those seen on the under surface of mantle.

Found in deep water, near French Battery.

### Doris Atrata. *Kel.*

Body half an inch long, and $\frac{1}{3}$ inch broad; ovate, convex; of a smoky black colour. Mantle broad, when expanded

covering the foot; smooth, edge semitransparent, the rest jet black. Branchiæ 8; small, of a smoky black colour, bipinnate; two sets of 4 each, all entering the same cavity round anus. Foot long, narrow, rounded in front, slightly projecting behind, when in progression; of a pale smoky colour. Mouth indistinctly seen. Oral tentacles linear. Dorsal tentacles pellucid, with clavate apex; black; tips white, looking like eyes set on the tentacles. Ova white, in 3 or 4 small narrow tape-like coils.

This species may prove to be either identical with *Doris fumata* of Leuckart, or *D. fumosa* of *Quoy et Gaym*, the latter more probably, as the remarkable, white tipped tentacles (always present), could not have passed unobserved by Ruppel. The branchiæ however, of *D. fumata* would appear to correspond with those of the Ceylon species. The next species too, which I regarded at one time as only a variety of *D. fumata*, must, I think, be considered distinct, as it was not found in April with *D. atrata*, but subsequently, when the latter became scarce.

### Doris Atroviridis. *Kel.*

Body 10 lines long, of an invisible green colour. Mantle broad, undulating, of a greenish black colour; edge streaked with a pale crimson line. Tentacles and branchiæ as in *D. atrata.* Foot of a pale invisible green. Ova like those of the preceding species. Some of the specimens had the mantle indistinctly, but regularly, spotted white; these spots, composed of several smaller spots round a centre, looked, through a magnifier, like little stars.

The young of this species is of a jet black colour, with a broad brilliant crimson line round edge of *mantle* and *foot.* If I had not specimens of different ages to compare with,

and observe the gradual diminution of the intensity of the red line, till it became almost obsolete in the larger specimens, I should be inclined to consider the characters of the young to be those of a distinct species; so very great are the external characters of the young and older animals. The presence of the red line in the young of this species, and its non-existence in the young of *D. atrata,* still more confirms me in the opinion already advanced, that they are not identical species. Both are very sluggish in their habits; generally, two or more lie locked in each other's embraces, under a stone or a coral branch. In confinement they live longer than any species I have had under observation.

### DORIS VARIABILIS. *Kel.*

Body 6 lines long, pellucid green; the red viscera seen through it. Mantle greenish brown and marked with longitudinal rows of reticulated whitish spots. Dorsal tentacles clavate, laminated; greenish brown, speckled; tip white. Branchial plumes 8, small, round a central cavity, tripinnate; brown, speckled white. Foot pellucid green; shorter than mantle.

This species is found in great abundance on rocks in Dutch Bay at low water mark. They vary much in depth of colour; green however always prevailing. In habits like *D. atrata.*

### DORIS EXANTHEMATA. *Kel.*

Body 5 inches long; pinkish or light purple colour. Mantle long, broad; covered with large and small, smooth conical and rounded nodules, rising from smooth elevated bases. The upper surface is of a deep olive brown colour,

having several white splashes; edge of a lemon colour. Under surface of mantle pinkish, and near the body there is a broad undulating reddish band, terminating abruptly on each side, below the foot; not unlike in appearance to some cutaneous disease. Dorsal tentacles long; pinkish and smooth for $\frac{2}{3}$ of its length, apex clavate, laminated, truncated; of a pale brown colour. Oral tentacles long, conical; pinkish. Branchial plumes 6; large, pendant, tripinnated; plumes pinkish red and speckled white; midribs greenish. Foot much shorter than mantle, deeply grooved and notched in front, obtusely pointed posteriorly; of a light pink colour, except the edge which is of a lemon colour with transverse striæ.

The whole animal gives one more the idea of a horrid disease than the charms of a sea nymph. This species is semi-gelatinous and very glutinous on the surface, particularly the mantle. When dead it rapidly dissolves, and cannot be preserved in spirits. The largest specimen I have seen measured 8 inches long and 5 inches broad. It will not live more than a few days in the Aquarium. Ova of a beautiful red colour; coil $\frac{3}{4}$ inch broad, and 18 inches in length. This species resembles *Doris carbunculosa,* but the smooth nodules, and the red ova of the former will always be sufficient marks of distinction.

## Doris Carbunculosa. *Kel.*

Body nearly $4\frac{1}{2}$ inches long; oblong, oval; of a pinkish purple colour. Mantle semi-gelatinous, broad and long, and of an oval form; purplish brown colour, studded with numerous large warty nodules, and larger ones rising from a raised *tubercular ringed* base. Nodules of a deeper brown colour; some have also a greenish tinge and others are variegated

with white. Dorsal tentacles long, produced, clavated, truncated superiorly, laminated; of a pale purplish colour. Mouth with a small triangular shaped veil. Branchial plumes 5; large, broad and long; closely tripinnated; of a rusty red colour, grizzled with white. Foot short, oblong, oval; of a purplish pink colour; sides of under surface veined and of a pink colour.

The mantle of this inelegant *Doris*, is not unlike some carbuncular formation. The under surface is pinkish and shaded with purple. It is a very unsightly object. The edge of the mantle of the young is mottled yellow. The whole animal is nearly 5 inches long, and 3½ broad in the centre. Ova white, deposited in narrow tape-like form in 4 or 5 broad coils. The white ova alone sufficiently distinguish this ugly Sea nymph from her rival *D. exanthemata.*

### Doris Intecta. *Kel.*

Body one and a quarter inch long. Mantle warty; of a dark brown colour, nearly black; on the medial line is a thick white pasty line. Dorsal tentacles brown; clavate laminated. Oral tentacles long, linear, pointed; of a bright brown colour. Branchial plumes 6, tripinnated; of a golden brown colour. Foot golden brown; narrow, longer than mantle.

This warty Doris is easily distinguished from others of a brown colour by its rufous warty mantle, and the dirty white line on back. Even the young have the white dorsal streak. Very common in low water in the months of September and October.

### Doris Lanuginosa. *Kel.*

Body ⅓ inch long; of a pale green colour. Mantle green, covered with short downy hair. Dorsal tentacles green,

lamellated, pubescent. Oral tentacles not observed. Branchiæ 10 or 12; small, of a sap green colour, bipinnated. Foot shorter than mantle; of a pale green colour, transparent.

Of this downy species I have only seen one specimen. It lived only a few days. Found near Nicholson's Cove.

## DORIS SPONGIOSA. *Kel.*

Semi-gelatinous. Body nearly 3½ inches long. Mantle broad, oval, covering the foot in all parts; of a dull yellow brown colour, deeply pitted; margin of pits granular; cavities spongious. The whole upper surface of mantle looks like the surface of some species of sponge. Beneath of a darker yellow brown colour. Dorsal tentacles large, with slightly truncated, laminated apex, sheaths large, funnel shaped; granular. Oral tentacles (?) Branchial plumes 5, grey, drooping much; bipinnated. Foot broad, long.

This very curiously formed *Doris* is found in deep water in the Inner Harbour. The young may be mistaken for a distinct species, from the lateral cavities or pits being deeper. The whole animal is nearly the size of *Doris exanthemata.*

## DORIS STRIATA. *Kel.*

Coriaceous. Body 1½ inch long. Mantle nearly smooth; white, with light brown wavy streaks. Under surface white, with linear wavy streaks near the body. Dorsal tentacles with short conical laminated apex. Oral tentacles white, linear pointed. Branchial plumes 5 or 6, small, bipinnated; white, streaked with brown. Foot pure white, narrow, oblong. Found in Dutch Bay.

### Doris Corrugata. *Kel.*

Body nearly one inch long, oval whitish. Mantle coriaceous, corrugated and studded with small tubercles; those on the sides larger, and each has a spine; of a pale watery green colour; black spotted under surface, also greenish and spotted with small dots. Dorsal tentacles short, open, greenish, lamellated. Branchial plumes grey; 7 or 8, short, pinnated. Foot pale green; narrow; shorter than mantle. Oral tentacles short, triangular, pointed.

I have seen only one live specimen of this curious *Doris.*

### Doris Picta. *Kel.*

Coriaceous. Body 2½ inches long. Mantle large, oval, covering entirely the foot; upper surface granular, of a yellowish brown colour, splashed with large and small irregular brick red spots; under surface white and near the body painted with small and large bright red spots. Dorsal tentacles, clavate, laminated, slightly truncated; sheaths large, granular. Oral tentacles, long, pointed, white, spotted red. Foot broad, shorter than mantle; white.

This remarkably painted *Doris* is found in deep water. Occasionally it burrows in the sand, where it lies for hours;—plumes and dorsal tentacles alone being uncovered.

### Doris Bellicosa. *Kel.*

Coriaceous. Body 2¼ inches long. Mantle large, oval, upper surface granular and covered with small spines; of a dull brick red, or chocolate colour, and irregularly streaked with pale yellow. Under surface of mantle white, splashed and spotted with chocolate. Branchial plumes 6, large, bipin-

nated; of a dull rose colour, and speckled yellow in small specimens. Dorsal tentacles with small clavate, pointed apex. Oral tentacles white, short, pointed. Foot broad, oval, of a dark red colour with a pale whitish edge.

Found in deep water in the Inner Harbour of Trincomalie. The mantle of this species resembles much that of *D. picta*, but its spines and chocolate-coloured foot sufficiently distinguish it from that species, which has a white foot and beautifully painted under side of mantle. They live for many months in a Vivarium.

### Doris Castanea. *Kel.*

Carneous. Body one and a quarter inch long. Mantle thick, granular and tubercular; of a reddish chestnut colour. Dorsal tentacles red, short, laminated; tip produced, whitish. Oral tentacles short, linear, pointed. Branchial plumes 6 (?) short, bipinnated; of a purplish colour. Under parts deep vermillion red, and speckled with darker red. Foot short, red.

Found near Sober Island, Trincomalie Harbour.

## Sub-genus. Onchidoris.

### Onchidoris Leachii, *Blainv.*

Carneous. Body oval, about $1\frac{1}{4}$ inch long. Mantle granular and studded with filamentous granules. Those on the posterior third of mantle often large, and appearing like small branchial plumes. No dorsal tentacles. Two oral tentacles, which appear to protrude through notches, from under the anterior edge of mantle. The foot is broad and nearly

occupies the whole of the under part of mantle. Anus opens on the under surface of the posterior part of mantle. Orifice of the organs of generation on the right side.

Found on rocks in the Inner Harbour. I have scarcely any doubt, that this is the *Onchidore* described by *Blainville* from a specimen seen in the British Museum, whose *habitat* was not known.

The colour of the animal is of a light grey, mottled with black spots in some specimens. In spirits the filamentous granules are not seen, but when the animal is alive they are so distinctly, and the contractile character of the filaments are very observable, especially of the larger ones.

### TREVELYANA, *n. g.* √

Body without a cloak. Two dorsal tentacles without sheaths, non-retractile. Mouth in front of head, without tentacles. Branchiæ in a circular disc on the back; non-retractile.

### TREVELYANA ZEYLANICA. *Kel.*

Body 1¾ inch long, narrow, elevated and inflated near the branchial plumes; semi-gelatinous, white and spotted with small dark orange red spots, set wide apart from each other. Head rather produced and rounded; also spotted red. Mouth circular, small; situated in front, without veil or tentacles. Branchial plumes 15 or 16, situated on posterior third of body, round a large disc, in the centre of which is the vent. Plumes long, downy, closely set; pure white, with a longitudinal bright red streak on the back of each; slightly contractile, but they do not retract into a cavity; when extended, they resemble a small tuft of marabout feathers. Genital

orifice in a nipple-like process, situated between the anterior and middle third of body. Foot long, and broad; terminating posteriorly in a lancet shaped point, about $\frac{1}{4}$ inch from body; white, with a delicate light orange red line on the edge of the foot; this line is carried partially on each side of head. Tentacles 2, dorsal; short, conical, pointed; upper half indistinctly laminated; of a light orange red colour at tip; base colourless, transparent. Ova yellow, deposited in bead-like coils. They generally deposit the coils on branches of sea weed. Sometimes, this *Doris* resembles a miniature fantail pigeon; particularly when perched on sea weed, and the small marabout plumes are elongated.

Found on rocks and sea weed near Sober Island.

This elegant creature does not resemble any of the described species. The form of the body is not unlike that of the genus *Ancula*. Its nearest approach, in other particulars, is to *Polycera*.

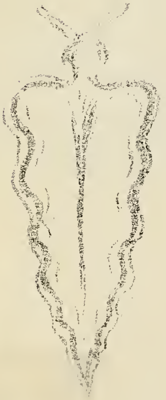
I venture to make a distinct genus of this *Doris*, and dedicate it to Sir Walter Trevelyan, to whom I am indebted so much for the liberal aid he has afforded me in my researches into the Natural History of Ceylon.

## Fam. TRITONIADÆ.

### MELIBŒA. *Rang.*

Animal elongated, with a narrow, channelled foot and long slender tail; sides of the back with pairs of tuberculated lobes, easily deciduous; tentacles cylindrical, retractile into long trumpet shaped sheaths: head covered by a lobe-like veil; sexual orifices behind right tentacle; excretory behind first gill on the right side.—(*Woodward.*)

*Scyllaea Dracaena*
Kelaart.



*Elysia [illegible]ulea*
K[illegible]aart

*Planaria Meleagrina*
Kelaart.

W. f. A. Forestier lith.

## Melibœa Viridis. *Kel.* √

Animal gelatinous, transparent, of a greenish vitreous colour. Body covered with hairy filaments. Head small, nearly circular, covered with filaments. Veil large and very expansive; circular opening lined with cilia. Tentacles 2, about $\frac{3}{8}$ of an inch long; capsule small, covered with filaments. Branchiæ 6 or 7 on each side, unequal, wedge shaped; placed alternately; base broad; slightly pedunculated, covered with cilia and filaments, giving a very hairy appearance; base brown; the other parts greenish and speckled with dirty white. Foot narrow, of pinkish colour on edge; and upper surface covered with short filaments.

Nearly 3 inches long.

Found on weeds near Inner Harbour; not common; can swim very actively. The veil over the head is used as a net doubtless to entangle its prey. The opening is very dilatable. Deposits its ova in a flat mass; ova white.

## Scyllæa (?) Dracæna. *Kel.*

Animal green; elongated, narrow. No mantle. 2 tentacles placed anteriorly on side of head; non-retractile; tentacles folded or cylindrical, slightly granular. On the centre of the back there are *three* unequal wing-like denticulated lobes, of a green colour, with tooth-like processes, tipped red; sides of the posterior half of body also toothed with two lines of small pointed, red tipped tubercles. Foot narrow, channelled. Mouth protected by two small semi-orbicular flaps or veils. Orifice on right side. Length nearly one inch.

I have some doubts as to the propriety of placing this species under the genus *Scyllæa.* I could not discover any tufted branchiæ on the surface of the dorsal lobes. I propose

naming this genus, closely allied to Glaucus, if new, in honor of Dr. Templeton, late of the Royal Artillery (brother of the Belfast Naturalist) who has contributed considerably to the Fauna of Ceylon.

I have found only one specimen, on a branch of sea weed. It looked at first like a piece of green weed, but on placing it in fresh sea water, the lobes expanded and waved about very briskly. The red tips of the lobes contrasted beautifully with the bright green of the animal. It lived only a few hours.

### POLYCERA (?) CEYLONICA. *Kel.*

Body ½ inch long. No distinct mantle. Head covered by a membranous fimbriated veil; the long filaments slightly toothed. Veil continuous with a narrow membranous expansion on side of body, which are united at the tail. Large fimbriated filaments also on sides of body. A membranous crest runs on the medial line of back. Dorsal tentacles retractile in a sheath; clavate, laminated, incurved at the tip: brown, white tipped. Oral tentacles white; broad and short. Branchial plumes 5, short, bipinnated, retractile, placed in a circle, in the centre of the back, near the third pair of dorsal filaments. Colour above, bright orange red; beneath whitish, with red specks seen through the transparent foot. Ova, bright red; in narrow coils. The whole animal is scarcely one inch long; and its broadest part not more than ⅜ of an inch.

I have placed this species, very doubtfully, under the head of *Polycera.* I believe there is sufficient reason to make a new genus of the leading characters of this pretty little creature. The transparent membranous expansion is fully extended when the animal swims, which it does, more freely

than any known species. For 10 or 15 minutes it will keep floating and moving its body like an eel in the water. Very rare; a few specimens lived for many months in my Vivarium.

## Fam. EOLIDÆ.

Animal with papillose gills, arranged along the sides of the back; tentacles sheathless, non-retractile; lingual teeth 0. 1.0; ramifications of the stomach and liver extending into the dorsal papillæ; excretory orifices on the right side; skin smooth, without spicula; no distinct mantle.

### EOLIS* HUSSEYI. *Kel.*

Tentacles 4. Both pairs of the same shape and form—but the anterior ones longer, of a limped orange hue, tipped with white. Back of a dull orange brown colour; a triangular white space behind dorsal tentacle. Branchiæ numerous, in 3 rows on each side of body, white and ringed with light purple, tip white. Foot dilated anteriorily, no lateral processes.

Rare; named in memory of a departed and beloved companion of my earliest scientific labours.

### EOLIS BICOLOR. *Kel.*

Body $\frac{3}{8}$ inch long, slender; waxy white; a dusky spot on neck anterior to dorsal tentacles. Dorsal tentacles short, smooth, transparent white at base; corrugated or laminated at apex, of a deep orange red colour, becoming darker at

* *Etym.* *Æolis,* daughter of Æolus.

tip. Oral tentacles twice as long; pellucid white throughout; tapering, curved. Head small, rounded. Branchiæ medium sized; narrow, acutely pointed; white with a subterminal orange red ring; apex waxy white. They are set in 6 or 7 small clusters, the anterior ones composed of 34 or more branchiæ; the others of two, rarely of three; becoming smaller as they approach the tail. Foot linear; white, transparent; slightly expanded in front.

Found among sea weed in Back Bay, Trincomalie.

### Eolis Effulgens. *Kel.* √

Tentacles 4; 2 dorsal moderately long, laminated obliquely; dark orange, tipped white. The two anterior ones orange, with a whitish spot in centre, and tipped white, a dark shade behind dorsal tentacle. Branchiæ in 5 or 6 clusters on each side of back. The anterior clusters consisting of 12 or 15 narrow, obtusely pointed branchiæ; orange red at base, ringed with white and orange, tip white; a bluish line running longitudinally for nearly two-thirds of its length.

Found in great number in Dutch Bay, and other parts of the sea near Fort Frederick. Spawns in June and July. Ova white, in narrow thready coils.

### Eolis Paulinæ. *Kel.* √

Tentacles 4. 2 dorsal red, wrinkled. The two terminal tentacles pinkish, tip red, base white. Branchiæ reddish, numerous, short; anterior ones have a whitish central ring, tipped red. Posterior ones of a redder colour, tips more broadly tipped with red; the central white ring less distinct. Foot expanded, with a short, triangular-pointed process. Length 3½ lines.

### EOLIS TRISTIS. *Kel.*

Four tentacles. 2 dorsal, about half the size of the two anterior ones; white with blackish rings. Body white, an interrupted blackish line on each side of back. Branchiæ in clusters of three or four; short, pointed,. white, and ringed with black. Foot slightly expanded, and notched anteriorly. Length about 3 lines.

Found on sea weed in one of my Aquaria. Ova white.

### EOLIS NODULOSA. *Kel.*

Four tentacles; opaque white. Dorsal long, pyramidal pointed, with three nodular rings; oral tentacles short, narrow pointed, white with a yellowish shade. Head and back white. Branchiæ in 5 small clusters on each side; long, nodular, obtusely pointed; opaque white and spotted indistinctly with slight orange brown; base darker. Foot slightly contracted anteriorly.

Length about ½ an inch.

### EOLIS SMEDLEYI. *Kel.*

Dorsal tentacles pyramidal, ringed; of a dusky grey colour. Oral tentacles long, pointed, white, with a central red ring. Branchiæ in 5 small clusters on each side; the anterior pair the largest. Papillæ short, conical; white, and ringed with grey. Foot long, with anterior tentacular processes. Length 4 or 5 lines.

I have named this species in remembrance of one who was a frequent visitor of my "Aquarian establishment," and who took a warm and friendly interest in all my scientific pursuits. This small *Eolis* was discovered on some sea weed growing in a Vivarium.

## Genus Proctonotus. *A. and H.*

Animal oblong, depressed, pointed behind; dorsal tentacles 2, linear simple, with eyes at their base, behind; oral tentacles short; head covered by a small semi-lunar veil; mouth with horny jaws; gills papillose, on ridges down the sides of the back and round the head in front; vent dorsal.—*Woodward.*

### Proctonotus Orientalis. *Kel.*

Animal semi-gelatinous, greenish. Dorsal tentacles 2, bifurcated and retractile. Oral tentacles short, pointed. Branchiæ, 4 or 5 rows on each side of body, those nearest the body smaller; wedge-shaped, rounded superiorly, flattened; green, spotted grey and green. Branchiæ carried round the head in 2 or 3 rows; middle ones longer, all of the same shape. Foot broad, long, grooved in foot. Length 2½ inches. Ova white, in waved thread-like coils.

This exceedingly interesting animal may perhaps occupy a new generic place, as I do not observe the *bifurcated dorsal branchiæ* noticed in the other species of the genus Proctonotus. When coiled up it looks like a flower, with green petals.

Found in Trincomalie, in May and July.

### Pterochilus Viridis. *Kel.*

Animal light green. Length ½ inch. Tentacles two, simple, long, pointed. Head with small lateral lobes. Branchiæ very numerous, closely set; long, linear, acutely pointed. Branchiæ green, and spotted with darker green and grey. Foot linear. Found on sea weeds, and, owing to its colour, not easily recognised. Lives for a long time in confinement. Ova green.

## Fam. Elysiadæ.

### Genus. Elysia. *Risso.*

Animal elliptical, depressed, with wing-like lateral expansions; tentacles simple, with sessile eyes behind them; foot narrow.

### Elysia Grandifolia. *Kel.* √

Head and body light green; white, and occasionally black spotted. Head and neck naked. Tentacles 2, folded longitudinally, on side of head; bronzed green, tip brown. Buccal tentacles 2, small. Membranous wing-like expansion on each side of body; broad anteriorly; acutely pointed posteriorly, and united at the tail. Membrane green. Edged with a black and a golden yellow line. No distinct foot. Orifice on the back (?) Mouth beneath.

The whole animal gives one the idea of a large leaf; and when moving, that of a butterfly. Found on sea weed. Some are more than 3 inches long; greatest transverse diameter, with wings expanded, 2½ inches. Distinct veins, filled with fluid seen on the wings; the heart pulsating on the centre of the back. I have some doubts as to the propriety of placing this interesting creature under the head of *Elysia*. If on further investigation, it is found that it does not belong to any known genera, I propose naming it Hydropsyche.

### Elysia Punctata. *Kel.* √

Smaller than the last species; largest specimen seen measuring 1½ inch.

Animal of a lighter green colour. Tentacles dark brown,

spotted white. Back whitish green, dotted with black and green, and spotted like the black. Edge of mantle black, and shaded with golden; under surface of wings tubercular and dotted black.

Found on sea weed. Not easily distinguished from the young of *E. grandifolia.*

### Elysia Cœrulea. *Kel.*

This is a very small beautiful species, about $\frac{3}{4}$ inch long; when the wings are folded, it is not thicker than a crow's quill. Tentacles 2; blue, with a central red ring, tip blackish. Body and wings blue; under part of head and fore part of foot red; edge of wing lined with black and red lines, the latter outermost.

Found on sea weed, in the Inner Harbour. All three species have the same generic characters, and doubtless belong to the same genus.

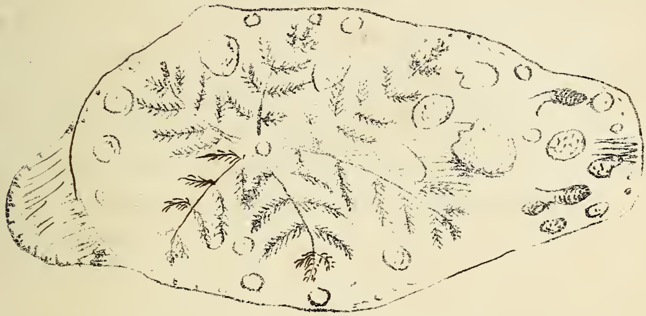
## Order. Infero-Branchiata.

### Genus. Phyllidia. *Cuv.*

Animal oblong, covered with a coriaceous tuberculated mantle; dorsal tentacles clavate, retractile into cavities near the front of the mantle; mouth with two tentacles; foot broadly oval. Gills forming a series of lamina extending the entire length of both sides; excretory orifice in the middle line, near the posterior end of the back, or between the mantle and foot; reproductive organs on the right side; stomach simple, membranous.

### Phyllidia Zeylanicus. *Kel.*

Mantle tubercular; salmon coloured; three continuous black



*Doris Funebris*
Kelaart

*Eolis Husseyi* Kelaart

Pl. 7

A. Perera Lith.

lines run round the whole length. The internal one broader, taking within its circuit the dorsal tentacles and anal orifice; two other lines run parallel to this all round the mantle; the outer one narrowest. Dorsal tentacles large, conical, pointed; circularly laminated at the upper half, which is of a black colour. The two oral tentacles small, black. Foot whitish, notched in front; the blackish viscera seen through. Branchiæ whitish on sides of the body except in front. Anal opening on a black coloured tube, behind which, there are 4 or 5 large tubercles of the same form as those on the other parts of mantle. Length one inch; $\frac{1}{8}$ inch broad.

Very rare.

### Genus. DIPHYLLIDIA. *Cuv.*

#### *Syn.* LINGUELLA. *Blain.*

Animal oblong; mantle ample; gills limited to the hinder two-thirds of the body; head with minute tentacles and a lobe-like veil; vent at the right side, behind the reproductive orifices? lingual teeth 30. 1. 30.

### DIPHYLLIDIA FORMOSA. *Kel.* ✓

Body pink. Mantle leaf-like; dark purple, with purplish black shades; edge yellow, streaked longitudinally with golden yellow, (broad lines alternated with very delicate narrow ones.) Veil purple black, except the anterior edge: beneath, of a lively pink colour. Foot pink, grooved in the median line of posterior half. Branchiæ buff; a whitish spot on anterior third of plumes. Dorsal tentacles emerging through notches on anterior edge of mantle; tentacles red with blackish tips and sides. No oral tentacle. Length $2\frac{1}{2}$ inches, $1\frac{1}{4}$ inch broad.

This very beautiful species is found in deep water. It occasionally buries itself in sand, with only the head and tentacles exposed, and lies for hours in this position.

## Order. TECTIBRANCHIATA.

Animal usually provided with a shell both in the larva and adult state ; branchiæ covered by the shell or mantle ; sexes united.

### Fam. PLEUROBRANCHIDÆ.

### Genus. PLEUROBRANCHUS. *Cuv.*

Animal oblong, fleshy, convex above with a very large and overspreading mantle. Foot large, equally outspreading, and thus leaving a wide canal all round the body. Head distinct, furnished with a veil, uniting on each side with the borders of the foot, and with two tubular tentacles, which are split anteriorly ; mouth at the extremity of a proboscis ; branchiæ composed of a double row of lamella, forming a plume on the posterior right side, between the mantle and the foot. Anus carried by a small tube behind the branchiæ. Organs of generation in front. Shell sometimes rudimentary, membranous, with a tolerably distinct apex hidden in the thickness of the mantle.—*Woodward.*

#### PLEUROBRANCHUS CITRINUS ? *Ruppel.*

Orange red ; mantle darker than the other parts of the animal, and speckled with whitish spots. About 1 inch in length. Ova reddish, in circular broad coils.

Very common in Trincomalie. Found in low water, on coral stones and sea weed, nearly throughout the year. Spawns in May, June and July.

### Pleurobranchus Reticulatus? *Gmel.*

Pale orange red, reticulated mantle, and spotted purple.

About 2 inches long. Found near Fort Frederick, Trincomalie, in shallow water, among rocks.

### Pleurobranchus Zeylanicus. *Kel.*

Pale yellow, splashed with darker yellow and brown, and minutely spotted with rusty brown.

About 2 inches long.

Rare ; found in Back bay.

### Pleurobranchus Purpureus. *Kel.*

Deep reddish purple. Mantle very dark purple, and spotted with still darker purple. There is a bright white zig-zag line on each side of the back of some large specimens. Length nearly 6 inches ; 4 inches broad. The young is of a lighter purple, and may be mistaken for another species.

Found in deep water, Trincomalie.

# CEYLON ZOOPHYTES.

## Radiata.

### Order. Polypi.

### Fam. Actiniadæ.

Animal single, fleshy, elongate or conical, capable of extending or contracting itself, fixed by its base, but with power of locomotion, mouth in the middle of the upper disc, very dilatable, surrounded by one or more rows of tentacula; oviparous and viviparous; marine.

### Genus. Actinia. *Linnæus.*

Body conoid or cylindrical, adhering by a broad base; the space between the mouth and the rim of the upper disc occupied by one or more uninterrupted series of conical, undivided tubular tentacula, which are entirely retractile.

### Actinia Wardii. *Kel.* v

Body large, greenish yellow, except the upper half, which is of purplish colour and tuberculated; the other parts nearly smooth, indistinctly streaked. Disc buff, with darker radiating lines. Tentacles in 2 or 3 rows, about one inch in length;

narrow, pointed obtusely; whitish; base purplish, tip bright crimson, transversely striped with grey or dark buff.

Height $2\frac{1}{2}$ inches. Breadth nearly 2 inches, when expanded.

Found in deep water on the oyster banks at Cotteaar, opposite Fort Frederick.

This handsome species I have dedicated to Sir Henry Ward, Governor of Ceylon, under whose auspices I have been enabled to prosecute my researches among marine animals, with more than ordinary success.

### Actinia Tranchelli. *Kel.*

Body short, longitudinally striated with pale green, alternately with lines covered with yellow and white tubercles, small ovular granules round edge of disc. Disk circular, cup shaped; greenish and rayed with 4 or 5 white lines. Tentacles about an inch long, set in two rows, narrow, finely pointed, pellucid, and spotted with opaque, oblong, white and purplish spots. $1\frac{1}{2}$ inch high and $\frac{3}{4}$ inch broad. The inner row of tentacles generally erect, and the outer curving over side of body.

Found in Dutch Bay. Named in compliment to Miss Tranchell, of Trincomalie.

### Actinia Pudica. *Kel.*

Body opaque white; irregularly striated and spotted with light crimson. Tentacles few, pellucid white; short, conical; set in two or three rows. Disc pellucid, and streaked with milky white.

This elegant Anemone, when detached, floats on water

like a globe, and may be taken for a species of the genus *Mayas*.

Found on small stones in Back Bay, Trincomalie.

### Actinia Passiflora. *Kel.*

Body semi-carneous, brown. Tentacles few; short, stout, truncated, or capped? purplish white, the longer 5 or 6 have dark purple base and rings.

This may be a species connecting *Capnia* with *Actinia*. Height 1 to $1\frac{1}{2}$ inch, $\frac{2}{3}$ inch broad.

Found near Sammy Rock.

### Actinia Refulgens. *Kel.*

Small, the largest seen scarcely one inch long; body white, translucent; tentacles short, in two rows; brown with golden spots.

Found on stones in Back Bay, Trincomalie.

Resembling a *Zoanthura*, but the clear diaphanous body and the disunited tentacles, at once show this creature to be an *Actinia*.

### Actinia Vermicosa. *Kel.*

Very small. Body 3 lines in diameter and 4 lines in height; whitish pellucid. Tentacles from 12 to 18, small, worm-like; golden yellow or dark yellow brown. Very viscid. When the tentacles are withdrawn this little creature looks like the larva of an insect; oblong globose, with a golden coloured head.

### ACTINIA FLUCTUOSA. *Kel.*

Body pale, flesh coloured; indistinctly longitudinally striated, with white spotted lines; several rows of pale blue granules near edge of disc.

Disc waved, tubercular, forming sometimes in triangular or quadrangular masses,—at other times circular; centre of disc pale—the rest white with radiating lines.

Tentacles numerous, in 3 rows, pale brown, occasionally greenish pellucid. The number on inner row fewer; extreme point white.

Height 1 inch. Breadth $1\frac{1}{4}$ inch.

Found in Back Bay, Trincomalie.

### ACTINIA SAMARAGDANA. *Kel.*

Small, disc of a beautiful bright emerald green, with white lines or radiating rays. Tentacles numerous, set in 3 rows; short, oblong, semi-conical, obtusely pointed; white at the base; beyond this, purplish brown, the rest very pellucid, dashed with purplish and white spots.

Body flesh coloured, longitudinally striated. Two or more rows of pale green rounded tubercles, on discal margin, inferior to outer rows of tubercles; at times these granules are of a white colour.

About 1 inch in diameter, and $\frac{3}{4}$ inch high. Found in deep water, Inner Harbour.

### ACTINIA AUSTINII. *Kel.*

Body rounded, thick, reddish; covered with brick red tubercles. Disc pellucid white, or reddish. Oral opening $1\frac{3}{4}$ inch in diameter, margin surrounded with tentacular-like

bodies in two or three rows. Tentacles numerous, in four rows; nearly 2½ inches long, narrow, acutely pointed; pellucid, white, spotted on the inner side. Stands 2½ inches high.

This large Anemone is found in great abundance on the rocks near Fort Frederick in the months of May and June. Some, entirely free of the brick red colour, are of a pale greenish white ; others, have the disc one half purple and the other half grey. It adheres to the finger.

I have named this species in remembrance of a valued friend, who was one of the founders of the Ceylon Military Medical Officers' Museum,—Dr. Austin, late of the 97th Regiment.

On my recent visit to Colombo I obtained many specimens of a smaller Anemone from Mutwal rocks, closely resembling this species, but with short tentacles, and without the adhering qualities of the foregoing species. I am inclined to believe this to be a distinct species. Colours very changeable.

## Genus. ANTHEA.

Body cylindraceous, adhering by a broad base ; tentacula disposed in circles round the mouth, elongated, tapered, and incapable of being retracted within the body.

### ANTHEA INDIANA. *Kel.*

Body transparent, almost colourless, globose at base, elongated; a few white spots near disc. Tentacles long, delicate, finely pointed, set in two rows on the edge of a greenish transparent disc. The inner set of tentacles more than twice as long as the external row. Tentacles pellucid, indistinctly ringed, alternately with grey and white. Oral opening sur-

rounded with an elevated hexagonal ring, taking the form of a cup, on the centre of which is the transverse slit of the mouth.

This parasitical Anemone is found on Pearl Oysters, in the Harbour of Trincomalie. It grows very rapidly in the Vivarium,—and is a good guide for ascertaining the quality of the sea water in which it is placed. When the water is impure, or any animal in it dead and decaying, this *Actinia* shrivels up and assumes a dark brown or blackish colour, and as the water is purified the creature regains its pellucid form.

### Anthea Arachnida. *Kel.*

Resembling the A. Indica, but much smaller, and the disc is spotted black. The tentacles worm-like; pellucid white, and spotted dusky. Found on rocks and shells.

### Anthea Aurea. *Kel.*

This is a very minute species; when elongated, nearly one inch high, and scarcely 4 lines in breadth. Body pellucid, tentacles few, short; golden yellow.

Found on rocks and shells.

### Anthea Meleagrina. *Kel.* ✓

Body short, broad, greenish, translucent, slightly tubercular. Tentacles numerous, of moderate length, narrow, pointed greenish brown, with darker brown rings. Mouth slightly elevated. Disc pale green.

Height $\frac{1}{2}$ inch. Breadth $1\frac{3}{4}$ to 2 inches when expanded.

Found in the Inner Harbour, in deep water, adhering to Pearl Oyster shells.

### Actinodendron Argentea. *Kel.*

Body white. Disc granular, frosted white. Tentacles short, acute; silvery white, transverse granulated lines on inner surface; short pinnules on sides.

Height ½ inch. Breadth one inch. Very rare. Found in deep water.

### Actinodendron Zeylanicus. *Kel.*

Body large, semi-gelatinous, yellow or buff, longitudinally streaked, alternately with lines of pearly tubercles. Disc broad, cup shaped, greenish brown, or purple, with numerous radiating lines of various colours; granular. Tentacles purplish brown; numerous, in 3 or 4 rows; broad, long, pointed, crossed on superior surface with white lines, which are laterally tubercular, or slightly pinnated. A row of large oval bodies on edge of disc. Height of the largest specimen seen 3½ inches. Breadth 3 inches. Tentacles 1 to 1¾ inch long, all of nearly equal length.

This handsome arborescent Anemone is found on rocks in the Inner Harbour, in two or three feet of water.

### Actinodendron Horologia. *Kel.*

Body white, with pinkish streaks. Disc depressed, circular, pale brown, granular; a broad pale purplish circle, about midway between oral opening and tentacles, and on this ring

are twelve broad purplish streaks, placed equidistant. Tentacles in 3 rows; short, flattened, pointed; those nearest the oral opening larger. All have tubercular granules, placed in transverse rows, from 6 to 8 in number. Tentacles yellowish, a few white granules near edge. White tubercular lines placed in longitudinal rows on surface of body. Body when elongated about $2\frac{1}{4}$ inches high.

Found at Trincomalie, on small stones, in low water.

### ACTINODENDRON VIRIDIS. *Kel.*

Body white, with greenish streaks and rows of white granules. Disc depressed, greenish; $\frac{3}{4}$ inch in diameter. Tentacles short, acutely pointed; granulated on edge; set in two rows. Those nearer the disc shorter, a row of larger white spotted granules on edge of disc.

$2\frac{1}{2}$ inches high; narrow at middle and base. Trumpet shaped above.

Distinguished from Horologia from the absence of the purple zone on disc, and from its longer tentacles. The tubercles too are less swollen, and there is a more marked space running longitudinally on tentacles.

Found with its body buried in sand in the Harbour of Trincomalie.

### DIOSCOSOMA (*Actinodiscus*) ? CEYLONICA. *Kel.*

Body thick, short; pinkish, minutely punctulated with bright red; near the disc the body is streaked longitudinally with closely spotted purplish lines. The body is expanded into a cup-like disc, of a bright vermillion red colour, with radiating white lines. Disc broad, expanded, and covering the

whole body, surface covered with small (three or four lines,) short, conical, truncated tentacles, disposed in rays, running from oral opening to edge of disc, alternated with shorter ones which proceed from middle third of disc with two other shorter ones, on each side, and the whole terminate at the margin in close compact rays. On each side of oral opening, is a semi-globular body with a central foramen, which communicates with the oviducts.

The colours of this singular form of Anemone vary much; at times, it is all of a purplish brown with greenish reflections, on other occasions the uncovered space of disc is of an earthy brown colour, or green, and the rays of tentacles either entirely green, or maculated with purple and white.

Breadth of disc when expanded from 4 to 5 inches.

If this Anemone is to be considered of a genus distinct from Actinia, I think of reinstating the generic term of *Actinodiscus*, given to a much smaller creature by *M. Blainville*, for it also, like the species of Leuckart's *Dioscosoma*, has two discs, and the animal, when waiting for its prey, is not unlike a depressed hour glass in shape. It can withdraw the superior disc within, when the red spotted body is seen to be of a club shaped form.

### PEACHA GOSSEI. *Kel.*

Body semi-carneous, covered by a brownish skin, corrugated, narrow and long. Tentacles from 19 to 21, long, narrow and acutely pointed; either of a green colour, or purple, marked on superior surface with transverse blue or white lines, some of which are arrow-shaped. Mouth on a conical eminence. Inferior opening giving passage to ova and excrementitious matter. Length 4 or 5 inches, and about $\frac{3}{4}$ inch

broad at base, when elongated. Very active in springing; it can adhere to sand or stones.

This is, I believe, the second species known of Gosse's new genus *Peacha*. I have dedicated it to the original describer of the genus. Mr. Gosse's description led me to observe this species very closely, although I was at first induced to consider it a species of Edwardsia. The inferior orifice admits of the passage of a moderate sized probe. The oral orifice has not that foliated appendage described by Gosse. It is for him to determine whether this is a generic character.

### Zoanthura.

Zoanthura, sp.—green disc.

Z. Mammalifera.—brown disc.

Being now on the eve of embarkation for India, I have only time to notice the above two species of Zoanthura, which I trust will be described by other naturalists who may succeed me.

## CEYLON ENTOZOA.

### Order. Parenchymata.

This order includes all those Entozoa which have the body filled with a parenchyma, or pulpy matter, either in a cellular tissue, or simply in the cavity, in which there is no alimentary apparatus to be discovered, except a few canals, which carry nourishment to all these parts. The ovaries are also imbedded in the parenchyma; there is no abdominal cavity, no intestine, and no vent; and the signs of a nervous system are few and doubtful.—*Cuv.*

## Fam. Tremadotea.

Have the under part furnished with cup-like discs, or suckers, by which they adhere.

### Genus. Planaria.

Body flattened, depressed. Like the *Flukes* (which infest the liver of sheep), they are bisexual. Very voracious, and will even feed upon their own species. They multiply rapidly in the ordinary way, and also by division of the body—even spontaneous division as is alleged. Mutilated parts are also very readily reproduced, and a partial division of the body, will even produce an animal with two head or two tails, according as the anterior or posterior end is cleft. Several species inhabit the fresh waters, but larger ones are met with on sea shores.—*Cuvier.*

The species herein described are all marine, found on rocks and sea weeds in the harbour and bays of Trincomalie. They are exceedingly interesting creatures, some rivalling the tribe of Dorididæ in colours. They live for a long time in the Vivarium. The mouth, situated in most of the species near the anterior third of under part of medial line, opens and dilates like that of a Sea-Anemone. Ova of most species white, deposited in thin flakes on rocks and sea weed.

Further investigation will, I believe, lead me to separate the species into more than two genera ; the majority of species correspond with *M. Dugè's* Derastoma, in which there is one opening, nearer the anterior edge than in Planaria. The presence of tentacles, or rudimentary ones, on the anterior edge, or on the back, will also perhaps form a generic distinction. I have attached the species without any appearance of tentacular appendages, to a new genus, Penula, *mihi.* The mouth too in this genus is placed nearer the centre of under part.

### Planaria Cerebralis. *Kel.*

Rudimentary tentacles anterior, formed by two folds of the margin. Upper surface of a yellowish brown colour and minutely streaked with fine wavy brown lines; border lined with a black line, streaked with white. Beneath, of a beautiful salmon colour. Mouth large, placed on the anterior third of lower part of body; the lips are white.

This is the largest species observed, nearly 3½ inches long, and 3 inches broad. Ova greenish white.

### Planaria Violacæa. *Kel.*

Tentacles as in last species. Upper surface violet purple colour, edged with bright yellow. Median line yellowish; under parts rose coloured.

About 1¼ inch long, and ¾ inch broad. This beautiful species, in a quiescent state, resembles some variety of pansy. Ova yellow.

### Planaria Viridis. *Kel.*

Tentacles folded; green, spotted brown; edge dark grizzly brown. Under parts paler.

About 1¼ inch long.

### Planaria Armata. *Kel.*

Tentacles folded, but more distinctly formed. Upper surface of a dark purple colour, covered with short, black spines. Beneath pale purple, smooth. About 1½ inch long, and nearly 1¼ inch broad.

### Planaria Papilionis. *Kel.*

Tentacles as in last species, black, white tipped. Upper surface yellow, covered with small black spines. Beneath pale yellow. Margin whitish.

Length about 1 inch.

Very like a butterfly moving in the water.

### Planaria Purpurea. *Kel.*

Tentacles rudimentary. Upper surface of a beautiful purple colour; beneath paler purple.

About 1½ inch long.

### Planaria Fusca. *Kel.*

Upper surface dusky brown. Beneath paler brown.

About 1½ inch long.

### Planaria Elegans. *Kel.*

Tentacles red, situated on the anterior third of mantle. Upper surface pale yellow, shaded with greenish brown, black dots; margin black, lined with orange. Beneath whitish.

One and ¼ inch long.

### Planaria Thesea. *Kel.*

Tentacles white, with red tips, rising from depressions, or cups, placed near the middle third of body. Upper surface of a chocolate brown colour, edge yellow. Mouth in the middle, below genital organs. Beneath pale purple.

One and ½ inch long.

### Planaria Striata. *Kel.*

Tentacles rudimentary. Upper surface brownish purple, streaked with brown. Beneath pale orange brown.

Length $2\frac{1}{2}$ inches.

### Planaria Meleagrina. *Kel.* √

Tentacles of an oval form. Medial line reddish, edged with a black line, the rest striped with broad white and light purplish streaks; margin waved and edged with black. Length $1\frac{3}{4}$ inch. There are two linear appendages on neck, above eye spots.

### Planaria Undulata. *Kel.* √

Tentacles rudimentary. In medial line purplish, the rest pale yellow, with undulating lines and spots of purplish brown; margin purplish. Length two inches.

### Planaria Aurea. *Kel.*

Tentacles two, simple; pointed, rising from the anterior third of body. Upper surface golden and speckled with white and brown.

Nearly $2\frac{1}{2}$ inches long.

No drawing made of this species.

### Planaria Dulcis. *Kel.* √

Tentacles rudimentary. Body brown in the medial line, the rest light green, minutely spotted with reddish brown. Margin white.

Length one inch.

### Planaria Zeylanica. *Kel.*

Tentacles rudimentary. Upper surface of a dark purplish chocolate colour; margin white, with an internal adjoining orange and black line. Beneath paler.

Length $2\frac{1}{2}$ inches, and $1\frac{1}{2}$ inch broad.

Very abundant in months of May and June. Ova white.

### Genus. Penula, *n. g.* *Kel.*

Animal gelatinous, flattened like Planaria, but without any appearance of tentacular appendages. Mouth placed beneath, near the central third of body. Eye spots on anterior third of back.

Ruppel figures one species of this form in his Work on Abyssinia.

### Penula Ocellata. *Kel.*

Upper surface pale yellowish brown, with dark brown ocellated spots. Beneath, pale buff. Length 2 inches.

### Penula Punctata. *Kel.*

White. Above minutely punctulated with reddish brown. About $1\frac{3}{4}$ inch long.

### Penula Fulva. *Kel.*

Yellowish, striated transversely.
Length $2\frac{1}{2}$ inches.

### Penula Alba. *Kel.*

White throughout.
Length $1\frac{1}{2}$ inch. Narrow. Ova of all the species whitish.
Several other species I have no doubt will be yet obtained from Ceylon.

---

As these pages are going through the press, I have returned from Calcutta, and I am now preparing for the Pearl Fishery at Arripo, where I hope to obtain many curious forms of Zoophytes.

*Account of the works of Irrigation constructed by King Prakrama Bahoo, contained in the Sixty-eighth and Seventy-ninth chapters of the Maha Wanso, with Introductory remarks, by Louis De Zoysa, Esq., Modliar.*

The following extracts from the Maha Wanso, having reference to works of Irrigation executed in the reign of Prakrama Báhú I., (A. D. 1153—1186), may not prove altogether devoid of interest, in connection with the very able and interesting papers on the subject of ancient irrigation in Ceylon, recently published by order of Government. The Sovereign alluded to is the celebrated 'Prakrama Bahoo the Great,' the constructor of the "Sea of Prákrama," the invader of India and Burmah; and whose reign Mr. Turnour characterizes as "the most martial, enterprizing, and glorious in Singhalese History."

The first extract is the 68th chapter of the Maha Wanso, and contains an account of the efforts made by Prakrama Báhú to promote the cultivation of rice, on his assuming the Government of the *Pihiti Ratta** under the title of Mahádí Pádo (or sub king.) The second extract is a part of the con-

---

* "The ancient divisions of Ceylon were :—*Pihiti Ratta,* bounded on the west, north, and east, by the sea; on the south by the Mahawelli Ganga, and Dedroo Oya rivers; it was also sometimes called Raaja Ratta as the ancient capitals were situated in it.

*Ruhunu Ratta,* bounded on the west and north by the Mahawelli Ganga, and Kalooganga (or Caltura) rivers, and on the east and south by the sea. The mountainous portion of it was called Malaya Ratta.

*Maya Ratta,* bounded on the north by the Dedroo Oya, on the east by the Mahawelliganga and the mountains, on the south by the Kalluganga, and on the west by the sea."—(Turnour, Ceylon Almanac, 1834, p. 57.)

cluding chapter of the reign of the same monarch, and gives a summary account of the principal public works executed during his government. It consists of 87 verses, of which the first 24 relate to the formation of extensive gardens and plantations; the next 26 to the construction of tanks and canals; and the last 27 to the erection of various public buildings, such as dagobas, image houses, preaching halls, inns or houses for strangers, libraries, theatres, &c. I have only translated the verses relating to tanks; those which have reference to canals and water-courses having already been translated and published by Mr. Turnour in the Ceylon Almanac for 1834.

I have not thought it necessary to add any comments of my own, by way of illustrating the translation; but I may perhaps be permitted to say a word in reference to the information which a passage in the first extract gives respecting the "Sea of Prákrama," to which so much attention has lately been drawn by the publication of that valuable contribution to the ancient History of Ceylon,—the "Report on the Ellahara Canal, by Messrs. Adams, Churchill and Bailey."

As stated by these Gentlemen, "the situation of the Sea of Prakrama has never hitherto been satisfactorily ascertained."

Turnour states (vide Ceylon Almanac of 1834, p. 68) that "the Sea of Prakrama with its embankments of many outlets is yet unknown, or at least unnoticed."

Major Forbes indeed surmised that the series of Lakes connected by the Ellahara Canal, might be the waters to which the vanity of a king gave his own name, but he adds, that "until this canal shall have been traced through the Konduruwawe hills, the extent, and difficulty of such an undertaking must excite doubts whether it were successfuly accomplished."

The explorers of the Ellahara Canal, were, however, the first who declared their belief, that the series of Tanks connected by this canal were the waters which bore the name of "the Sea of Prakrama."

It does not however appear, that this opinion is corroborated by the Maha Wanso, since in a passage in the 68th chapter, mention is made of a particular tank, which was afterwards called the "*Sea of Prakrama.*"

The passage alluded to is the following.

"අතීවඛුද්දකංපුබ්බෙ "පඬවාපිඤ්ච" කාරිය,
සංවඩ්ඪිතුච්චතායාම විත්ථාරත්ථිරපාළිකං
අබ්භුන්නතමහාවාරි පාතංසජලනිග්ගමං
පරක්කමසමුද්දොති වොහාරඤ්චාභිරොපයි"

Atìwa Khuddakan pubbé "*Pandawápin*" cha káriya.
Sanwaddhituchchatáyáma witthá ratthira pálikan,
Abbhunnata mahàwàripàtan sajala niggaman,
"Parakkama samuddoti," wóháranchá bhirópayi.

"Moreover having made Panda Wápi (Panda tank) which was formerly very small indeed, (into one) containing a body of water great and exceedingly lofty, having outlets for the water, and an embankment of greatly increased height, length, breadth, and strength,—he gave it the name of the 'Sea of Parakkama.'" *

I am not prepared to say what particular tank is meant by

* [It is somewhat remarkable that the above important passage in the Maha Wanso should have escaped Mr. Turnour's researches, since he gives the following account of the outlets from the "Sea of Prakrama," which is quoted by the authors of the Report of the Ellahara Canal. "The king [Prakrama] formed the deep canal called the Makara Ganga, which flowed from the Makara outlet of the sea of Prakrama: from the same sea, the great canal Haima Wattee flowing to the Maha-Maigee-Wame. From the outlet called Samanmal, the canal distinguished by the name of Neela-Wapane: flowing from the outlet called the Keela-Kara Oodyaane, the Salalawatte Canal: flowing from the outlet celebrated under the name of Waitra-Watee, the Waitra-Watee Great Canal: from the southern outlet, the Toongha-badsa Canal: flowing from the Mangala outlet, the Mangala Ganga Canal: flowing from the eastern outlet, the Champua Canal: flowing from the same sea to the Poornawardhana Tank, the Saraswasttee Canal: flowing westward of that (Saraswastee) canal, the Waimawattee Canal." No less than ten outlets are here enumerated, as formed by the king to convey, in different directions, the accumulated waters of the tank named after himself. Of these, four appear from their names and description to have been much larger than the rest. The identification of the Sea of Prakrama, therefore, seems to depend upon the discovery, in Padivel Colum, or any other of the large tanks, of ten outlets corresponding with those mentioned in the above extract.—*Ed. Ceylon Almanac*, 1857, in which work this article was by permission inserted.]

"Panda Wápi," in this passage, as I have not been able to meet with any information either in the Maha Wanso or in any other work, which would enable me to identify it with any degree of certainty. The name *Panda Wápi,* occurs but twice in the previous part of the Maha Wanso. King Mahadathieko Maha Nago is said to have bestowed the "*Panda Wápi Wihara,*" i. e. "*the Panda Tank Wihára,*" on a certain Samanero, which proves the existence of a tank of that name so early as A. D. 8. (Vide Turnour's translation of the Maha Wanso, p. 214.) The next reference to *Panda Wápi* is in the 60th chapter of the Maha Wanso, in which it is mentioned as one of the tanks constructed (or prepared) by King Wijaya Báhú I.,* who reigned at Pollonnaruwa A. D. 1071—1126. I am, however, inclined to think, that we may recognize the *Panda Wápi* of the Maha Wanso, in the modern Padavi or Padavil Colum of the Wanny District.

The reasons which have led me to form this conjecture are, 1st, the similarity, or rather the identity, of the names; for the Pali word වාපි *Wápi,* and the Tamil word குளம் *Kulam* (erroneously spelt *Colom,*) both mean *tank,* so that in fact the Pali term *Panda Wápi* is an equivalent for the Tamil, *Panda* or *Pandi Colom,*† which may have been corrupted into *Padavi* or *Padavil Colum.*

---

* As this part of the Maha Wanso has not been translated into English, I annex a translation of the verses relating to works of irrigation in this reign.

"The tanks of Mahaheli, Reheru (Sairuwella Maha?) Danta, Katunnaru, Panda Wapi, Kalagalla, Erandagalla, Dighawatthu, Mandawata, Kittaggabodhi Pabbata, Walahassa Mahadaragalla Kumbhilasobbha, Pattapasana, and Kanawapi, as well as many other tanks whose embankments had been in ruins, did the king build (and repair,) ever intent on the welfare of the poor. The ruler of the land having constructed embankments (to prevent inundation) in many rivers, streams, in various parts (of the Island) rendered the country abundant in food. Having also constructed the canal *Tillawatthu,* which had been in ruins, he filled the tank of Manihera (Minnery) with water."—(vide 60th chapter of the Maha Wanso.)

† I am aware of the existence of another "Great Tank" bearing the name of *Pandi Colom* in the Uvah district, but being situated in the *Rhuna Ratta,* it could, I think, be scarcely regarded as the *Panda Wapi* of the Maha Wanso, if, as I infer from the context, it was constructed during the period, when Prakrama Bahu, was *Mahadi Pado,* or king of Pihiti Ratta.

Secondly, the stupendous size and magnitude of the work.

Sir Emerson Tennent, who gives an interesting account of this tank in his work entitled "Christianity in Ceylon," calls it "*the largest as well as the most perfect of these gigantic works in Ceylon,*" and speaks of it in such terms as would not be inappropriate in describing such a tank as "the Sea of Prakrama" must have been.

But the most interesting account, as well as that which gives us the loftiest ideas of this gigantic work, is that contained in the Governor's Minute on the Eastern Province.

His Excellency says, that "it is the most wonderful work that I have yet visited, whether we look to size, difficulties of execution, or to the time at which these difficulties were surmounted." "North of these again, about 40 miles, is *Padiwel Colum, the most gigantic work of all,* for the bund which is in perfect repair, except at the one spot where, in the course of ages, the waters have forced a passage between it and the natural hills which it united, is 11 miles long, 30 feet broad at the summit, 180 feet at the base, and 70 feet high." "Padiwel Colum, the greater part of which I rode or walked over, was formed by the waters of the rivers Morray Oya and Moonguna Oya, confined to the plain, by the enormous bund which I have just described. *Its construction must have occupied a million of people for* 10 *or* 15 *years.*"

The most satisfactory way of settling the question as to the identity of this tank would probably be by obtaining a facsimile and translation of the inscription to which Sir Emerson Tennent thus alludes, in his note on the tanks, already referred to.

"On the top of the great embankment itself, and close by the breach, there stands a tall sculptured stone, with two engraved compartments, that no doubt record its history, but the Odear informed us that the characters were Nagari, and

the language Pali, or some unknown tongue, which no one can now read."

I have only to add, that my object in submitting the accompanying translation, is by no means to advance any hypothesis of my own on the subject, but simply to put parties competent to decide on the point, in possession of the data contained in the hitherto untranslated part of the Maha Wanso, and especially to aid the investigations of those gentlemen whose meritorious labours have already invested the subject with so great an interest.

---

## CHAPTER LXVIII.

This sovereign of lofty aspirations, who was well acquainted with foreign countries, thus thought (within himself.)

"In what well governed kingdom is the administration of affairs conducted, without obtaining a knowledge of its means.

"The object of my sovereignty is the advancement of the prosperity of Religion and the State, having vanquished all enemies. This kingdom although very small, being filled with great prosperity, I shall by the superiority of my wisdom, soon bring into such a state as that it will surpass the greatness of other kingdoms.

"Conferring appointments on my officers whose advancement is identical with my own, according to their respective merits, rewarding them with honours and wealth, causing my own people to settle in various parts within my dominions from the mountain Samanta Kúta (Adams' Peak) as far as the Sea Coast, the cultivation of grain should be carried on in as many ways as possible."

Having thus reflected, the King thus addressed his officers.

"In my kingdom are many paddy fields cultivated by means of rain water, but few indeed are those which are cultivated by means of perennial streams, and great tanks.

"By rocks, and by many thick forests, by great marshes is the land covered.

"In such a country, let not even a small quantity of water obtained by rain, go to the sea, without benefitting man.

"Paddy fields should be formed in every place, excluding those only that produce gems, gold, and other precious things.

"It does not become persons in our situation to live enjoying our own ease, and unmindful of the interests of the people. And ye all, be ye

not discouraged, when a necessary, but a difficult work is on hand. Regard it not indeed as a work of difficulty, but following my advice, accomplish it, without opposing my instructions."

The highly renowned Monarch, then, ordered the construction of the great embankment celebrated under the name of *Kotta Baddha,* which had long been swept away by the action of the river, leaving behind nothing but the name, and which indeed had baffled the attempts of former kings (to keep in repair.)

Whereupon the ministers, one and all, represented, in various ways, the extreme difficulty of the work, and the instability of it, even if it could be accomplished.

The King rejecting their councils, (remarked) "What is there that cannot be done in this world by men of perseverance? Is not the tradition still current that Râmá built a bridge over the great ocean itself, by means of monkeys ?*

"If I am destined by fortune, to reduce this island under one regal canopy, and to promote the welfare of the state and religion, then indeed, will the commencement of the work see the accomplishment of it also."

Thus did he of great courage, inspire his ministers with courage.

Before the construction of the embankment, however, the profoundly wise ruler of the land made, from the mouth of the embankment, as far as the country of *Rattakara*, a great canal of great breadth and strength, and of many *pórisas* † in depth.

The Protector of the land, having assembled a great many stone cutters, workers in metal, iron-smiths and gold-smiths in the country, and having employed them in the work cutting stones, got made by them an embankment of great stablity and solidity, having the interstices of the stones invisible, like one continued sheet of rock, and having the work of plastering complete.

On the summit of the great embankment, the pious Rajah placed a Bo tree, an image house, and likewise a Dagoba.

The King, by means of this canal, so directed the course of the stream as to make it discharge itself into the sea.

Having cleared the great jungle on both sides of the canal, he formed

---

* In reference to the fable in the Ramayana, that Rama, the conqueror of Rawana, in crossing over from India to Ceylon, caused a bridge to be built over the sea, by his army of Wanaras or monkeys. The reef of sunken rocks which extends across the Gulf of Manar from Ramisseram on the Coast of Coromandel to Talamanar on the Coast of Ceylon, is supposed to be the remains of this bridge.

† "The measure of a man's reach." "Equal to the height, to which he reaches, when elevating both arms with fingers extended." (See Colebrook's Amarakosha, p. 160.)

paddy fields of many thousands of Wáhas* of extent, and converted the place in truth into a *Kottabaddha*, according to the literal meaning of the term, from the fact of its having *Kottabaddaha*† (perpetual granaries,) from the two Pali words *Kotta*, *granary*, and *abaddha*, *perpetual.*

Thereafter the King having dammed up the mouths of the rivers *Sankawaddhamáná*, and *Kumbhílawáná*, as far as the *Súkara Nijjhara* ‡ (literally Hog cascade, or stream,) and there too, having made a canal, and conducting the water into the tank of *Mahádáragalla*, thoroughly repairing (at the same time) the breaches thereof, including the clearing of the water-courses, (thus) brought into it a larger body of water than it had before, and having formed paddy fields from this place as far as the *Súkara Nijjara*, collected paddy.

The King moreover, having made a collection of water in the middle of the river Jajjara (Dedroo Oya?) and having formed paddy fields, collected vast quantities of grain.

Moreover, having made *Panda Wápi*, which was formerly very small indeed, (into one) containing a body of water, great and exceedingly lofty, having outlets for the water, and an embankment of greatly increased height, length, breadth and strength, he gave it the name of "the Sea of Parakkama."

In an island situated in the middle of it, on the summitof a rock § the King built a Dhátu gabbho (Dagoba) resembling the peak of Mount *Kaylása*.

---

* According to the Pali Nighandu of Moggallana.

| | | |
|---|---|---|
| 4 Nellis | make | 1 Lahassa (or Kurumni) |
| 4 Lahas | „ | 1 Drona |
| 4 Dronas | „ | 1 Marika |
| 4 Marikas | „ | 1 Khari (or Ammonam) |
| 20 Kaharis | „ | 1 Waha |

† This is no doubt the *Kotta Vella* of Brook. The Singhalese word *Vella* වේල්ල and the Pali word බද්ධ *Baddha,* both mean, an embankment.

" From *Kotta Vella* to Dastotte, a distance of 9 miles, the country is one of the most delightful I ever recollect seeing on this Island, nearly the whole distance a carriage might drive; there are strong marks of many of the plains and parts of the open country having been cultivated, it abounds in tanks and ravines to facilitate irrigation, all of which are neglected and broken. The reason the inhabitants assign for this, is want of people, and money to keep them in order. (Route from Matelle to Trincomalie, by way of the Ambanganga, by R. Brook, Esq.)

‡ Instead of " as far as the Sukara Nijjhara "යාවසූකරනිජ්ඣරං" some MSS. read "ඨානංසූකරනිජ්ඣරං" " the place Sukara Nijjhara." If this be the correct reading, the whole passage might be thus translated:

" Thereafter the King having dammed up, at the junctions of the rivers Sankawaddhamana, and Kumbhilawana, the place (called) Sukara Nijjhara &c."

§ I am informed by Mr. Braybrooke, who has visited *Padiwel Colum,* that there is a rock in the embankment, called by the natives දෙවියන්නේ කඳ *Deyyanne Kanda,* " God's Hill," or " King's Hill," which they believe is haunted by the spirit of King Mahasen, to whom tradition ascribes the construction of the tank.

In the middle also of the tank, he built a royal palace three stories high, and of superlative beauty; a palace indeed for the collected joys of the world.

The following, and many other ruined tanks, and mountain streams did this benevolent monarch repair, in various parts of his dominions, viz. the tank of *Mahagalla*,* the tank of *Setthi*, likewise that of *Wachchattanuka*, the tank of *Tamba*, and the tank of *Ambawa*, the tank of *Giribâ*, the tank of *Pátala*, the tank of *Mandaka*, the tank of *Mórawápi*, and the tanks of *Sádiyajgáma*, and *Tillagulla*, also the tank of *Mallawalli*, the tank of *Kálakitti*, the tank of *Kannikaragalla*, and the mountain stream *Buddhagama*, the tank of *Sukaraggama*, (the village of Hogs,) the tank of *Maha Kirala*, the tank of *Giri*, and those of *Rakkhamana*, *Amballa*, and *Katunnaru*, (the tanks of) *Jallibáwa*, and *Uttarala*, and that of *Tintinigama*, (the Tamarind village,) the tanks of *Dawalawitthi*, *Kirawapi*, and *Nallannaru*, the tank of *Karawitthawellattan*, likewise that of *Dumbarra*. The tanks of *Munnaruka*, and *Sallan*, and also the tanks of *Mulawári*, *Gerisigama*, *Polonnarutala* and *Wisiratthala*.

Draining up great marshes, in the country of *Panchayójana* (*Pasyodun*, or Pasdum Corle,) he formed paddy fields, and collected paddy.

Allotting lands (for paddy cultivation) in the jungles there, and in many other places, calling together the village chiefs, he caused the inhabitants to engage themselves in the cultivation of paddy.

In this manner having augmented nine-fold the revenues of the state from what they were, the wise King caused the country to be so prosperous as never to know the calamities of famine.

He who was skilled in the maxims of Government, wishing that there should not be even a small spot of land within his dominions inhabited by men, which should be left unbenefitted, formed many pleasant and delightful gardens, and groves, full of fruit-bearing and flower-bearing trees and creepers, of every variety fit for the use of man.

Thus did this sagacious Ruler of the land, cause his small kingdom, which had attained prosperity, by the superiority of his wisdom, to surpass other great kingdoms in affluence.

The 68th chapter of the Maha Wanso, entitled "the Advancement of the Prosperity of the Kingdom," composed both to comfort and to afflict righteous men.

### *Extract from* CHAPTER LXXIX.

This supreme of men, for the purpose of averting the calamities of famine, constructed many tanks and canals in various parts (of the Island.)

* I have no means of ascertaining the Singhalese names of these tanks. If we had a list of them in Singhalese, we might probably identify most of them.

Having turned the course of the river *Káraganga** by means of a great stone embankment, and having, by means of a great canal called *Akàsa Ganga* (Celestial river) conducted its broad stream to the Royal Palace which was a noble one resplendent like the sun,† he constructed the "King of Tanks," *(Wápi Rájá)* celebrated under the name of "the Sea of Parakkama," which was like unto a second ocean, and which contained a perpetual supply of water.

He likewise built the great tank known by the name of the *Lake of Parakkama*, having a stone aqueduct constructed over land of difficult access. Also the tanks of *Mahinda*, *Ekáha Wápi* (literally) "the Tank of One day," the *Ságara* (Sea)‡ of Parakkama, and the waterfall of *Kottabaddha.*

In many places, the chief of men, built minor tanks, in number one thousand four hundred and sixty-one. The Ruler of the land constructed conduits, and channels of stone, in no less than 300 tanks which had been in ruins.

The King also repaired many ancient tanks, such as the great tank of *Manihira (Minnery,)* the tank of *Mahádáragalla*, the tank of *Suwannatissa*, *Dúratissa*, and those named *Kálawápi (Kaláwawa,)* and *Brahmanggáma.* The tanks called *Nálikérathamba*, and *Rahéra*, likewise the tanks of *Giritalla*, and *Kumbhíla Sobbha.* The tanks of *Kánawápi*, *Padi*, and *Katí*, the tank of *Pattapásána*, the tank of *Mahana*, the tank of *Waadha*, and the tank of *Mahádanta*, the tank of *Kánagáma*, and the tanks of *Wira*, and *Wálahassa*, and that called *Súramána*, the tanks

---

* Major Forbes states that the river *Ambanganga* is joined "by a considerable stream," called *Kalluganga.* Might not this be the *Karaganga* alluded to here? The Pali form of *Kalluganga* would be *Kalaganga*, the only difference between it and *Kara ganga* being the substitution of the letter *l* for *r*.

† Instead of, "which was a noble one resplendent like the sun," ("වරභාසුර දීපකං") some MSS. have ("අකාභාසුරදීපකං,") which may be translated as follows, "made a shining or splendid Island."

‡ This is either a clerical mistake, or there were more than one "Sea of Prakkrama." While on this subject, I may here notice a very curious passage in the Raja-Ratnakara, which speaks of the construction by Prakkrama Bahoo, of three great tanks known by the names "Maha Samudraya," "Bana Samudraya," and "Mati" or "Mani Sagara."

This passage is translated by Upham as follows:—"The said king of Ceylon also rendered his fame great by causing to be made in Ceylon three great lakes, the first of which was called Maha Samoodra (i. e. great sea,) the second was called Bœna Samoodra (i. e. allied to the sea,) and the third was called Made Sawgiriya (i. e. the middling sea.)"

It is however, right to add, that this passage is not found in the Saddharma Ratnakara, from which the author of Raja Ratnakara, has copied almost verbatim the events of this reign. Nor indeed is such a passage found in any other work on Ceylon, which I have seen.

of *Pásánagáma*, *Kálawalli*, and *Kahalli*, and those named *Angagáma*, *Hillapatthakkhanda*, and *Maddaga*. These tanks which had been in ruins, did the king restore to their former condition, as well as others of less note, in number 467.

In about one thousand, three hundred and ninety-four tanks, did the king, who was a proficient in matters of state, effect repairs and improvements.

[*For the remainder of this Chapter, see Ceylon Almanac* 1834.]

---

## *Topographical and Statistical Account of the District of Nooweraкalawiya.* *By* A. Oswald Brodie, Esq.

---

The district of Nooweraкalawiya may be described as that portion of Ceylon which is included in the following lines:—

I. One running from a point one mile north of Dambool to another about five and twenty miles west of Trincomalie.

II. A second from the last mentioned spot to the ninety-fifth mile post south of Jaffna.

III. A third running thence to within six miles of Arripo.

IV. A fourth proceeding thence south-south-east to a place about twelve miles west of Pomparripoo.

V. A fifth joining this last mentioned point with that near Dambool.

The area of the district is about 2,900 square miles.

According to the last census returns [1852] the population is only 32,103, but this is manifestly erroneous, as there are 10,910 persons liable to the road tax, and the number of able bodied persons cannot well be more than one-fifth of the community. As all these returns are more or less erroneous,

(giving the numbers too small, as the headmen persist in omitting numbers of women and children,) we may safely reckon the population at about fifty-five or sixty thousand.

The number of houses appears to be 9,804, which would give 3 one-ninth persons to each house, but it must be observed, that headmen frequently apply the term "house" to a range of contiguous dwellings.

The district on the whole is flat, not indeed flat in the same sense as the land near Manaar, Jaffna, &c., is flat, but it is not in any sense mountainous; the general surface consists of gentle undulations, and here and there isolated peaks or short ranges of hills appear. These are most common in lines north-east and south-west of Dambool, and within twenty or thirty miles of that place, elsewhere they are of rarer occurrence and of less elevation. To the north, south, and south-west of the station, hills entirely disappear. The southern part of the district forms in fact the extreme northern verge of the great central mountain mass of Ceylon, and the isolated hills are outliers thereof.

The whole face of the country, except where occupied by fields or tanks, is clothed by dense forest; and a large tract lying to the south, south-east and south-west of the station is almost uninhabited. This arises in part from a want of water, and in part, as has been remarked, to the policy of the ancient rulers of the Island, who interposed this barrier between themselves and the marauders who were wont to infest the maritime districts. There is yet another circumstance which probably has not been without its influence, I refer to the intense dislike which the villagers have, to contact with strangers. So strongly does this feeling still exist, that we have even now to take the greatest care not to bring roads too near to villages, as in this case the people invariably abandon their dwellings, and migrate to some neighbouring but more secluded spot.

The prevalent rock is gneiss, the colour and structure of which vary considerably in different localities. It is frequently traversed by veins of quartz and felspar; but no circumstance of interest connected with these has attracted my notice. This gneiss here, as elsewhere, has a tendency to exfoliate in layers concentric to the present surfaces, the plates which thus scale off are of all thicknesses, from two feet downwards. This peculiarity renders it a matter of ease to split off tolerably regular pillars and slabs, and there can be no doubt that this circumstance has had a very considerable influence on the character of the national or adopted architecture.

Imbedded in the gneiss, at various places, one finds magnesian limestone, generally of a brilliant white colour and of a coarse crystalline structure; occasionally it contains crystals of hornblende, and also orange red spots, the composition of which I have not ascertained. The stone bears a good polish, and I am now trying it for flooring, a purpose for which it will, I think, be found well adapted, being clean, cool, cheerful looking, enduring, and ornamental. It is only within the last couple of years that the majority of the localities where this mineral occurs has been ascertained, and the discovery happened most opportunely, as numerous public works are in progress or contemplation. Hitherto lime has been brought from Arripo, a distance of forty-four miles.

In the early part of this year, I discovered in the bed of the Kalaar, about six miles east of the Doric, a number of fossil shells and corals converted into a beautiful semi-transparent amber coloured mass; the associated nodules of variegated chert also contain numerous petrifactions and casts. I was unable to examine the beds at leisure, and therefore only obtained mutilated specimens, but judging from these, I should think that these limestone strata belong not to the present, but to the tertiary formation.

On a late circuit Mr. Quinton pointed out to me consider-

able quantities of a dark heavy metalliferous stone, which has all the outward appearance of furnace slag. The native tradition is, that it is the refuse from the forges of giants who lived of old; but as I have since found it in many places, and as Mr. Quinton tells me that it is common over a large part of the Mulletivoe district, I am inclined to hope that it may be a natural product, and have instituted inquiries into the matter.

The soil of the district is generally of a reddish hue (occasionally intensely so), but, where liable to inundation, whether natural or artificial, it is darker and richer. Potter's clay is abundant, but so far as I know, none of it is adapted to the manufacture of the finer kinds of earthenware. The soil, on the whole, is not unfavourable to cultivation.

There are no natural lakes nor thermal springs in the district, nor are there any perennial rivers. The following are the principal streams, and in the wet season contain large bodies of water.

I. The Dambool and Meerisgone Oyas, take their rise near Dambool, and with some others of less importance, empty themselves into the great Kalawewe tank; their united waters on leaving this assume the name of Kala Oya, which for many miles forms the boundary between this district and Seven Korles, and ultimately falls into the sea near Pomparripoo.

II. Kalankootti Ella and Seeyumbelangame Oya, are tributaries of the former, which take their rise some fifteen miles west of Dambool, and also form, for some miles, the limit between the same two first mentioned districts.

III. The Malwathoe Oya; one branch takes its rise from the great Aervowewe tank, is called there Gall Oya, and a little lower down Karunagalle Oya; a second branch rises from the foot of Rittigalle Kande (the first hill in Noowerakalawyia) and joins the former a little to the east of the

Central road. The united stream flows into the deserted tank of Natchya Dhoowa, which gives it a local name. Still lower down (that is, in the neighbourhood of Anooradhapoora,) the river is called Mulwathoe Oya, and flowing to the west-north-west falls into the Kanedera Oya, two miles south of Kappechie in the Manaar district.

IV. The Kanedera Oya, of which there are two great branches, the Sangalee Kanedera, taking its rise in Kehndhae Korle, and Maha Kanedera Oya, in Kanedera Korle. These unite about three and a half miles west of the Central road, and this united stream falls ultimately into the sea, near Arripo, under the name of Arivi Aar or Paar Aar.

V. The Boo Oya or Pee Aar, rises in Kadawath Korle, forms for some distance the northern limit of this district, and finally joins the Arivi Aar.

VI. The Yang Oya has its source in the great Hoorooloo Wewe, and falls into the sea between Trincomalie and Kokelly, being known there as the Kalloo Aar.

## Botany, &c.

Though the whole district is covered with jungle, the quantity of useful timber is surprisingly small. In fact this remark is applicable to Ceylon generally, to a much greater extent than many imagine. The fact is to be attributed, mainly, to the great development of the chena system of cultivation, which is hereafter noticed.

The Dutch were, with regard to the protection of timber, and also in some other respects, much more provident than the English have shewn themselves:—they planted teak forests; we sell them for a tythe of their value, and then import timber from abroad.

The most valuable timber trees of the District are the following.

Paloo.

Halmilill.

Meelli.

Sattinwood (the Booroottoo and Weerunde of the natives) (*Sweitenia chloroxylon.*)

Koobook or Koombook (*Terminalia alata.*)

Tammana.

Meegaha (*Bassia longifolia.*)

Kiri Kohng.

Ebony.

Of cultivated trees we have the following.

Cocoanut (*Cocosnucifera*), which does not succeed nearly so well as in the Maritime districts. The produce does not by any means equal the demand; the usual rate of exchange is two cocoanuts for one seer of rice.

Palmyrapalm (*Borassus flabelliformis*); not common; it is little prized.

Talipot (*Corypha umbraculifera*); seldom met with, except in the south-east part of the District.

Jack, rare, though in some villages it bears readily.

Mango, very rare.

Of the smaller fruit bearing trees and plants, the following are to be met with in gardens; orange, lime, papaw, pine-apple, murunga, pomegranate, plaintain, brinjal, (*Salanum melongena*); bandukai, (*Abelmoschus esculentus*); thampala, (*Amaranthus*); pathola, or snake gourd (*Trichosanthus anguina*); besides a few varieties of gourd, melon, and bean. On none of these is the least care bestowed, and the produce is in every respect inferior.

The following are some of the plants which I have introduced:

Casuarinæ.

Sissoo.
Logwood.
American sumach.
Bourbon and New Orleans Cotton.
Madagascar plum.
Nam nam
Leetchee
Cape Cabbage.
Travellers tree.
Date.
Dwarf Cocoanut.
Double pomegranate.
Various species of Stramonium.
Do. Plumbago.
Do. Roses.
Do. Plantains and Bananas.
Teak.
Myrtle; with numerous ornamental plants.

For these I am chiefly indebted to Mr. Dyke, Agent for the Province; to his Assistant Mr. Twynam; to Mr. Thwaites, Superintendent of the Royal Botanical Gardens, and to A. Y. Adams, Esq., of Petoola.

Of all these before mentioned plants, the natives are encouraged to take seeds, slips or roots.

## Produce of District.

The staple product of the District is Paddy, grown in the manner usual throughout the low country, that is, in low, gently sloping lands, irrigated from artificial tanks, some of which are many miles in extent.

Each village is settled by a little colony, headed by two or more leaders or elders, called Gamerales.

After the ground has been cleared of jungle, a line is stretched down its length, then measuring from the bank, marks are put in, say at every ten fathoms, and each portion is given to a villager. If the soil varies greatly in the upper and lower parts of the field, or if one of these be for any reason preferable to the other, then each villager (shareholder or partner is the common term) will get one share in the upper and one in the lower part of the field.

To the Gamerales a double portion is given, in consideration of their superior position as village elders. It is to be observed, that every shareholder has a right to all the land enclosed within lines running across the field and passing through the two stakes on the centre line which originally marked out his portion; that is, each man, commencing within his own portion at the centre line, may clear to the right and left till he reaches the high grounds which enclose the field; but quarrels would instantly arise if he were to clear either up or down, as it were round the share of another. So soon as a share is allotted to a man, no matter whether he clears much or little, he comes under certain obligations; he must give one share of work to all repairs of the tank, and to the watching of the fields by night, and to the construction and up-keep of a ring fence. The original division is never lost sight of; thus, if two shares, even though they be contiguous, fall into the possession of one man, he will never talk of having "one large share," but of having "two shares," and will give two shares' work to watching, fencing, and repairing of the tank; so it is also with half or quarter shares.

The first and last shares, those at which the channel from the tank enters and leaves the field, are generally less productive than others. For this reason, and also because there is a larger quantity of fencing there, these shares, called the sehelle and pahalle ellepotthes (shares at the upper and lower water-courses) respectively, are invariably larger than the rest.

It frequently happens, that either before or after sowing, it is found that the supply of water will not be sufficient to irrigate the whole field; in such cases the people resort to a practice called *baethme* or "division." A portion of the field, of suitable size, is selected, and all the rest is abandoned. The selected portion is now divided into the same number of equal shares, as there are original shares in the whole field, and every original shareholder gets one baethme share for each original share in the whole field; and this in no way depends on the amount which he has cleared in his original share. Thus, suppose a man through idleness has not cleared any of the ground allotted to him, but has yet given, when required, labour to fencing, watching, and repair of tank, then when baethme is resorted to, he will be entitled to a baethme share, equal to that of his neighbours. It is to be observed, that the persons whose land is thus selected, do not get larger allotments than others. Frequently, the selected portion of land is worked in common, and the produce divided among the peasants according to the number of shares which they hold in their own right; at other times, it is actually subdivided, and each reaps the produce of the portion allotted to him, just as if it were his own ground.

Each such baethme arrangement is binding only for one crop; when it has been removed, matters revert to their original position.

Other customs connected with paddy cultivation, are as follows:—

If a man's baethme share is denied to him, then he has a right to demand a supply of water for his original share; if he insists upon this, it would in many cases happen that both his and his neighbours' crops would die; an amicable arrangement is therefore generally made.

If a man refuses to give his due share of work or money

to the repair of the work, he cannot lead water to his field till he has repaid those who laboured for him.

If owing to neglect as to fencing or watching, cattle or elephants damage the crops, then the man in fault must make good the loss.

If a man, after being warned that his cattle trespass, fails to yoke them two and two, or else to tie cross bars to their necks, he is liable for all damage which they do.

If shareholders neglect to cultivate their fields for any particular crop, then those who do cultivate are entitled to select and to cultivate contiguous lands equal in extent to their own; the object of this is to lighten the labours of watching, fencing, and irrigation, which would become very harassing if the cultivated portions of the field were isolated.

Several of these rules appear to me admirably adapted for the people and country. The people are naturally lazy; here are stimulants. They are poor, and have not a sufficiency of wholesome food; here is security for the land being cultivated by some one.

There are certain privileges attached to each village, as for example, the collection of honey throughout all the jungle attached to it; one half of the game killed; one out of every two tusks "bagged" in these; and the right of fishing the tank. All these rights give rise to constant squabbles.

The chief varieties of Paddy cultivated in the District are:

Dickwee }
Eelankalang } In virgin soil.

Mahawee, for tahwaloo, as it does not die though overflowed.

Ellwee ("Sudu and Kalu" white and black, ditto.) }
Kuruwee. }
Heenettee. }
Murungawee. } For paddy fields.

These vary in colour, size and taste. Their most important distinction, however, refers to the length of time which they require for attaining maturity; some take three, some four, some six months.

There are two crops annually; that sown in December and reaped in March or April, gives the Mahamohsum; the other, sown in May, gives the Yallamohsum in August and September. Occasionally, when the weather is favourable, and the preceding harvest has been lost, a crop is taken between the intervals, and is simply called " a between two years crop" (dhae awuruddhe atherae mohsum.)

The return from paddy fields, according to the reports of the headmen, varies from four to ten-fold; but there can be no doubt that the crop is frequently much heavier than this would induce one to suppose.

Another method of cultivating paddy is called tahwaloo: in this case the margins of the tanks themselves are cultivated, and the water for irrigation is raised by means of scoops, such as are in use at salt pans. This system gives larger returns than field cultivation, but the requisite labour is greater, therefore it is not in favour with the Singhalese; the Moormen carry it on to a considerable extent.

A third system of paddy cultivation is on elevated ground, so called high lands, in exactly the same way as other chena crops are grown; in this case irrigation is not applicable, and the crop is totally dependant for moisture on the natural fall of rain. The return is large, but the risk of losing one's labour is great.

I am sorry to say, that the general food of the people is not Rice, but Koorakan *(Eleusine coracana)* which is grown in chenas. These are pieces of land on which the smaller trees and brushwood are cut down and burnt, the thicker branches are in this way merely charred, and being piled

round the enclosure, form a toleraby good fence. The seed is sown broad cast, and then covered slightly by aid of that useful implement, the mamotie. A man can sow and cover about a seer of koorakan seed in a day. It rarely occurs that more than two crops are taken from one chena; after the last of these has been removed, the jungle is allowed to grow up and is not again cut till after the lapse of from five to fifteen years. It is evident that this system must prove most destructive to timber, as new land is cleared every year.

In these chenas various other plants, such as millet, &c.; as also varieties of gram, &c., are cultivated. One of the most useful of these so called fine grains, is the thalla of the Singhalese, (*Sesame. Sesamum Orientale,*) which yields an oil used for lamps and in medicines. The price of the seed is about a penny per seer, and large quanties are sold to Tavulum people from the low country, and to dealers at Trincomalie and Higgolle (Matelle.) The people are fond of cultivating this plant, and if an English merchant would make arrangements for purchasing it here, or at the neighbouring ports, the cultivation might be increased to a great extent.

Cotton is also grown in chenas, the seed being placed in the ground along with that of koorakan, which grows faster, and is removed ere the cotton has approached maturity. The extents of such lands are always estimated by the quantity of seed koorakan required; and about four seers of cotton seed are sown with one of koorakan. The cotton is sown about October, before the monsoon rains set in; the pods begin to burst in about eight months; and during the three following months the produce is gradually removed. If the plant be cut down at the close of the season, fresh shoots appear, and a second crop equal to the first is obtained, if the soil be good. From certain memoranda, collected by a pre-

decessor, about fourteen years ago, I glean the following information regarding a piece of cotton soil.

It measured eight seers of koorakan, which, as before shewn, is equal to thirty-two of cotton. A man was employed forty days in cutting down the jungle, twenty more in lopping, and twenty-five in burning it, and removing the rubbish. The soil being good, the plants attained a height of six feet. This chena yielded 30 wellys of cotton in the first season, and this was about four bullocks' load, worth six shillings and eight pence per load; the cotton is sold with the seeds unremoved.

One person will, in a day, clear a welly from its seed, and in four days will spin it into thread. This quantity is sufficient for a piece of cloth ten cubits long, and four spans broad. A weaver will complete this in three days, and receives in payment one and a quarter parrahs of koorakan, or half this quantity of paddy. It is to be observed, that there is not and never was a tax on cotton cultivation, so the above information may be looked upon as tolerably correct. From it we learn, that in 1838, a man's labour was freely given during at least eighty-five days to the working of a chena, the produce of which sold for £1. 6*s.* 8*d.*, which would give about 3¾*d.* per diem; but the cultivator, after reaping his koorakan, had to watch the cotton for nearly seven months, and had to collect, dry, and pack the produce.

At present, the people seldom get more than three shillings for a load of cotton; this is attributed to the vast quantities of cloth now imported from India and England.

Being anxious to multiply as much as possible the varieties of plants on which the people depend, I applied for, and obtained from Government, two sacks of Bourbon and New Orleans cotton seed, which I am now distributing among the

people, who, however, shew their wonted apathy on this occasion also.

High forest land is invariably selected for cotton.

Tobacco, when grown at all, is only found in small gardens, containing forty or fifty plants.

With regard to chenas generally, it must be observed, that unlike paddy fields, they belong not to individuals, but to villages collectively; and it is by amicable arrangements among themselves, that it is in each season arranged what portion shall be allotted to each man. As a general rule, all land from which water drains to the tanks or field of a certain village belongs to that village; and to its inhabitants is reserved the right of cutting chenas within the limits so defined.

For some reason, which I do not know, chenas are not portioned off by parallels, but by radiating lines from some central spot, such as a large tree, boulder, &c.

## INHABITANTS.

The mass of the inhabitants are Singhalese, approximating in manners, feelings, and appearance to the Highlanders, and not to the degenerate race which swarms in the Maritime districts, and for whom they entertain a thorough contempt. Every man is a cultivator or proprietor of land, and I do not suppose that there is one Singhalese villager who is to any extent dependant on a trade for livelihood. Many persons are by caste mechanics, as blacksmiths, goldsmiths, washers, tom-tom beaters, &c., but the last two bodies alone devote any attention to their hereditary business, and even their reward consists not in money, but in land; thus the people of a village will give a piece of land to some dobies on condition that they wash for them and attend on occasions of ceremony; so it is with tom tom beaters. If a man wishes to

get a new axe or mamotie, he first of all goes to Trincomalee, Anooradhapoora or Manaar, and purchases some iron; he then prepares a quantity of charcoal, and taking these, proceeds to some neighbouring blacksmith, who is brought into good humour by the gift of some cakes, &c., and is perhaps ultimately persuaded to undertake the work, which however proceeds slowly and gravely, several days being occupied in working and talking about the work: all this time the applicant renders assistance to the smith. I have never been able to induce a village mechanic to settle here; they like receiving money wages, but cannot bear regular hours. Of late, in consequence of public works being commenced, a few masons and carpenters are to be found at the station; but all are strangers to the District. To shop-keeping of every sort, the highland Singhalese have an insuperable objection, and thus it occurs that the boutiques along the roads are all occupied by Tamuls, Moormen, or low country people. It is only in such situations that boutiques are to be found. In the villages themselves they are unknown; each man grows his own paddy and koorakan; has his own cattle; and probably cultivates a few vegetables in his garden. If he wants a new cloth, he gives the cotton from his chena, and also some grain by way of fee to a weaver, or else he barters the product of his field with some passing trader. Until of late years bare money was almost unknown in the District, but is now becoming more common every day. In all dealings among themselves however, the natives adhere to the system of barter. The change already referred to, may be attributed chiefly to the fact that payment of taxes in kind has been done away with, and that the taxes in themselves are heavier. I am quite aware that many persons consider it an absurdity to maintain, that people can be better off simply because they are taxed, because money is taken from them; such is, however, the simple fact. The manner in

which it works is probably thus. A man knows that he will shortly have to pay to Government a couple of rupees; none of his neighbours will pay him for anything in cash, he therefore finds it necessary to grow something which he may sell to strangers, and he soon discovers that, *cæteris paribus*, the less bulky these goods are the better, after providing for the daily wants of himself and his family; he will therefore clear a chena and cultivate, say Sesame. The produce he then removes to Trincomalee, and sells for cash. He now finds that the sum he has received is greater than the amount of tax which he must pay, and in wandering through the bazaar his fancy is struck by some gaudy handkerchief, some bright brass vessel, some china, &c.; he buys the article and returns home. The sight of these purchases gives pleasure to his household, and creates in them new desires and new wants. To gratify and relieve these, he will in the next season clear a still larger chena, and so the process continues. The increasing influence of money is strikingly apparent in the instance of headmen and people of family, who now care much less than heretofore about keeping up large bodies of dependents. In a paper on the statistics of the Putlam District, which I had the honour to transmit to the Society some years ago, I shewed that the fishers there were most anxious that the now discontinued fish tax should be renewed; and on the whole I believe, that at present the people ought to be comparatively heavily taxed, not indeed to such an extent as to discourage them, but to such that they may be incited to industry.

The castes are the same as those in other Districts, with this exception, that there is one here not general over the Island, and which is superior to that which is elsewhere considered the highest, I mean the Wanne caste, who call themselves Wanniwurroo, the latter being a mere honorific. These persons are the descendants of certain Tamuls who came over from the

continent in the time of Raja Sen, who granted to each extensive tracts of land. They are very numerous here, and very troublesome, as they will not accept any inferior appointments, and for the most part think it quite beneath their dignity to educate themselves. As their claim to fill all the high offices has been rejected, they now frequently intermarry with Vellales, and will in all probability soon be incorporated with that caste.

Considerable numbers of domesticated Veddahs are to be met with, but none of those who still retain their primitive wildness reside in the District.

Six or seven villages of the Eastern Division are inhabited by a set of people who have much the look of Moormen. If asked to what caste they belong, they reply, " We are from Kurenagalle habagoe." Their neighbours call them " wagei," a name which they do not at all like. They do not intermarry with the people of the District, and seek for wives either in their own villages here, or in those of their comrades in Seven Korles. They preserve a tradition, that many centuries ago their forefathers came from Malwar, but do not know where that place is. They seem to be a sort of Dhoorias.

The Moormen or Mahommedans occupy numerous villages; they are locomotive, enterprizing, fond of trade, and very deceptive. Their love of money is a perfect disease; they are more robust, intelligent, and bold than the Singhalese, and are very much disliked and feared by them.

Many individual Tamuls have settled in the District, but I am not aware that any one village is exclusively occupied by them.

A few Caffres and Malays occur here; the former chiefly discharged soldiers and their offspring; the latter, people, who as I believe, have some very good reason for living in secluded spots.

Two circumstances exercise a most beneficial effect on the people; the first, that for the last three years there has not been a single tavern in the District; the latter, that there are no resident Proctors. Of course I do not mean to deny that many proctors may be good and honest men, nor that such are very useful; but it is evident, that proctors who would settle in such a district as this, must be the very refuse of their profession, and such men would be a curse to the District.

## Education.

About eighteen months ago an English school was set on foot, and is still maintained. Owing to the liberality of Government, no fees are demanded from the scholars, it being considered that the people must first learn what education is, before they are asked to pay for it. The number of scholars is only thirteen, but when a sort of boarding house now in contemplation shall have been constructed, the number may be expected to increase considerably.

A Tamul school, supported by private funds, is attended by a few scholars, but there is a constant succession of new faces;—so soon as a boy can read a little and scrawl his name, he sets up a boutique.

The best effects have followed from the strict examination to which applicants for headmanship are subjected, as to their proficiency in reading, writing, and arithmetic. In the latter respect, the progress is most marked, and has been assisted by the distribution of suitable books of instruction.

This being one of the most sacred spots of Ceylon, it might be expected that I should have much to say regarding the Boodhist priesthood. This however, is not the case; the priests here are ignorant beyond description; know nothing of their

own history or religion; and though they say that they have a copy of the Maha Wanse, acknowledge that they have never read it. As they do not take the slightest trouble with the people, and generally disappear until the time of the festivals approaches (at which period offerings to a large amount are brought in), the people are heartily wearied of their yoke, and if no external aid be afforded to the religion, it will soon be practically extinct.

I confess to having an extremely low opinion of the Boodhist priesthood. To judge from those whom I have met (the number is not small,) I think they will be found idle, selfish, inconsistent, and, *ex-officio*, discontented.

## Means of Communication.

There are no navigable or perennial rivers, and no canals in the District; and the trade of the country will not for a long time to come justify Government in altering this state of matters. Up till the year 1845 the only road in this District was that from Manaar to Anooradhapoora, along which the tappal has hitherto been carried. About the period mentioned, a sudden advance was made; a great central route passing from North to South, and opening the communication between Jaffna and Kandy, having been surveyed and cleared; others leading to Trincomalee and to Putlam were also opened, so far as they lie within this District.

That most excellent of laws, the Road Ordinance of 1848, has here, as elsewhere, effected much good; it is only necessary to remark, that the following works have been carried out within the last three years.

1. That the Central line between Jaffna and Kandy has received, general and extensive repairs.

2. That a substantial bridge, with three water-ways, has been constructed over the Sangeelee Kanedera Oya.

3. That the Putlam road has been brought into such a state of efficiency as the present nature of the traffic requires.

4. Similar improvements to the Trincomalee road have also been carried out.

5. Manaar road has received general repair, though no permanent bridges have been made.

6. A road between Madhawatchee on the Central, and Horrowepothahne on the Trincomalee road, has been surveyed, traced, and cleared throughout its whole length, though a few miles are still not available for cart traffic.

7. Another line joining Kekeerahwe on the Central, with Maragahawewe on the Putlam road, has been surveyed, traced, and opened, throughout about 24½ miles of its course.

8. A line joining Mahakekeerahwe with Horrowepothahne, (both as above mentioned, has also been traced.)

9. And lastly, a line from this to the Manaar road near Adapankoolum, has been surveyed, and in a great measure traced.

The whole amount collected during each year since 1850, is as follows.

| Year. | No. liable. | Value in Money. | | |
|---|---|---|---|---|
| | | £ | *s* | *d* |
| 1850 | 10117 | 758 | 15 | 6 |
| 1851 | 10923 | 819 | 4 | 6 |
| 1852 | 10910 | 818 | 5 | 0 |
| Total £ | 31950 | 2396 | 5 | 0 |

It will be observed, that the rate of commutation fixed for

six days' labour, is only one shilling and six-pence; this is just half of the real proportion, but this arrangement was purposely adopted, on the supposition that hired coolies do more work than statute labourers; besides which, this system enables one to concentrate one's efforts on such roads as most immediately call for attention. I think however, that these advantages have been over-estimated, and that the rate of commutation should have been higher.

Of late years, a good deal has been said about the desirableness of giving to the natives municipal privileges, and it was hinted that the Road Ordinance was but the first step in that direction. In those districts with which I am best acquainted, the hopes of the Progresistas have been wofully disappointed; the people frequently not shewing the slightest interest in the elections; not recording their votes; not even taking the trouble to attend.

There being little trade in this District, and the people having a great dislike to strangers and to bustle, the Road Ordinance is even now far from popular; but the more intelligent villagers are becoming convinced of the advantages which it secures to them.

## Climate.

Some one said long ago, that the climate of Noowerakalawiya was very deadly; that the place was a second Sierra Leone; and no amount of proof to the contrary has yet dissipated this absurdly erroneous opinion. It is quite possible, that twenty or thirty years ago, fever was more prevalent than at present; but I do not know of anything to warrant the conclusion, that even at that time it was unhealthy during the greater part of the year. Situated in a vast plain, which is covered with dense

wood, and in which there is a multitude of neglected tanks, the place is certainly no sanitarium, but still I think that during nine months of the year, it is fully as healthy as most stations. The unhealthy season lasts from the beginning of December till the end of February, and during this portion of the year the establishments are allowed to remove elsewhere. As the jungle around the station becomes cleared away, and as the place becomes more healthy, the furlough allowed is gradually circumscribed, and in the course of a few years, there will probably be no occasion for an annual interruption of public business. The fever of Noowerakalawiya is distinguished less by the violence of sudden isolated attacks, than by its insidiousness and long continuance. One is never very ill, but neither is one ever very well; one feels a general listlessness, a sensibility to the effects of draughts, which gradually debilitates one to a lamentable extent.

It is a common remark of the people, that droughts are much more common now than they used to be twenty or thirty years ago, and this is (justly, as I believe,) attributed to the great extension of the chena system, whereby pools, springs, and marshes are dried, and large surfaces exposed to the burning rays of the sun. I regret to say, that my manifold engagements, and frequent absence from the station, have prevented me from making any regular meteorologic observations.

## Antiquities.

Noowerakalawiya has a degree of local celebrity, from having, during many years, been the residence of the Singhalese Rajas.

We learn from the Maha Wanse, that prince Wijeya established himself at Tambapanny or Tambaadawiya, near

Putlam, about the year 543 B. C. His successor, in 504 B. C., removed to Wijitapoora in this district; and Pandikkabhayoo who followed in the year 474 B. C., took up his residence at Anooradhapoora; and from this time till A.D. 729, Anooradhapoora continued to be the metropolis of Ceylon. About the year 307 B. C., the thero (saint) Mahindho, son of Dhamma Soka, Emperor of India, introduced Boodhism into Ceylon. It was then that the branch of the sacred Bogaha (*Ficus religioso*) was brought to, and self-planted at Anooradhapoora; and here, enclosed in a triple terrace of masonry, it still exists, and still attracts annually thousands of pilgrims from all parts of the Island, and occasionally also from India, and even from Siam; and it is here that the yet venerated Dhootoogamoonoo, about B. C. 161, expended a vast amount of labour in erecting those bee-hive shaped edifices, called dâgobas, cheityas, or thoopoos, which enshrine relics of the philosopher Booddhoo; and which, though time has impaired the symmetry of their form, still tower in solemn grandeur over the surrounding forests, and proclaim to the yet distant traveller the locality of the sacred city. Seven or eight dâgobas of various sizes are scattered round the station: these with carved step stones, and altars, pillars, capitals, and images of Hindoo deities, with long stretches of low mounds and walls, form the chief antiquities to be found at the station, and attract notice, rather from their vast number and extent, than from any other quality they possess. They are interesting, as marking the period when Singhalese genius and enterprise reached their zenith; and to the eye of the engineer, the accuracy of the work is a matter of just admiration.

The Maha Lohkaposada will much disappoint the visitor. It consists simply of a solid square of roughly squared slender pillars, forty in each row, and rising about 9 feet above the general surface. Each side of the square is 221 feet. There

can be little doubt that these pillars were the mere foundations of a huge pyramidal wooden structure, nine stories in height, which must somewhat have resembled the so-called Chinese porcelain towers, and which, when decorated in the Singhalese fashion, must have formed a very striking, if not a very beautiful object.

It is impossible for me here to describe the various antiquities round the station. Perhaps a future paper may be devoted to the subject.

Some time ago I commenced a large scale plan of the ground around the station, but want of leisure has forced me to abandon the work.

Mihintalae, eight miles east of Anooradhapoora, is much resorted to by pilgrims; for there stands the oldest of the dâgobas, and there the great teacher Mahindho expired. A fine view, stretching probably from sea to sea, and far up to the Matelle hills, is obtained from the summit.

At Owkonne, about twenty-six miles south of Mihintalae, there is a colossal erect statue of Boodhoo, about thirty-five feet in height; it is cut out of solid rock, to which it remains partially attached. The right hand is raised as in the act of benediction.

Wijitapoora, near Owkonne, has been already mentioned. A siege which it underwent is minutely described in the Maha Wanse; but on enquiry, I could not ascertain the existence of any walls or other structures, except a small half ruined dâgobah.

Close to the southern extremity of this district, but just within the limits of Seven Korles, at Sessaeroowe Kande Vihare, there is a statue of Boodhoo resembling in size and position that at Owkonne.

Both here and at other parts of the district, I have met with and copied numerous inscriptions; but regarding these deem

it unnecessary at present to do more than state, that the characters employed are not to be found in any of the alphabets in my possession.

## Fiscal Arrangements.

This District always formed an integral portion of the Kandian Provinces, being specially entrusted to the third Dessawe for the time being. The last of these appears to have been Thalgahagodde Dissawe, who seems to have resigned about the year 1833. It was about this time that the District, as it now exists, was formed by adding some portions of Matelle and Seven Korles.

Until a few years ago, the native Headmen consisted of Maha Wanny Oonahehs, Wanny Moodianses, and Kahriakorunnas, all these being connected with both the Revenue and Police Departments. At present we have Divisions, Korles and Thoolahnes, under Rattemahatmeyas, Korales, and Lekeemes; of the first there are three, of the second seventeen, of the third about sixty.

Rattemahatmeyas receive £2 10*s.* per mensem, besides five per cent. on the revenue collected from their divisions.

Korales receive five per cent. on their collections, and hold, free of tax, such lands as they possess within their own Korles.

The Lekeemes, unlike the two other grades, are at present regarded solely as Police Vidahns. As a matter of fact, however, they remain, as formerly, general assistants of the Korales; and this arrangement ought, I think, to be again formally sanctioned. They hold, free of tax, such of their lands as lie within their own thoolahnes, and do not receive stated salary, nor percentage.

It is probable that the system of allowing Headmen to hold land tax free, will soon be altogether done away with. It has been maintained, probably with the intention of obtaining the services of men personally interested in their own divisions; but this object can be otherwise secured, and a constant source of demoralization cut off. At present, quantities of land are, to escape tax, entered in the names of Headmen, who after the lapse of some years claim, and frequently take possession of the lands themselves. At the same time, I see no objection to employing unpaid Headmen, so long as the offices are eagerly sought by the people. The Singhalese love of honour and distinction, though carried to somewhat unreasonable lengths, is in itself laudable, and gives a *point d'appui* to those who wish to elevate the people. In our own country, many offices unconnected with salary are eagerly contended for, and I see no reason why the same system should not be followed here. That unpaid headmen would take bribes is not more true than that the paid headmen now do so.

The Headmen are, on the whole, inferior in activity and intelligence to those of adjoining districts. This may be attributed to the fact, that the people were, until lately, almost debarred from intercourse with others; that the district was formed of fragments taken from others, and which are only beginning to amalgamate into one homogeneous whole; that the resident Civilians have been frequently changed; that the establishment is necessarily broken up annually; and that formerly the Wannia caste had a sort of monopoly of the headmenships; and even now, many of these people, while they think that they have a right to be made Korales and Rattemahatmeyas as opportunities occur, yet totally neglect their own education, on the plea that they can pay others to read and write for them. I think that a bad effect has been produced by the unceremonious way in which headmen are

appointed and dismissed; and believe, that Government, in giving up all sorts of state and ceremony, is gratuitously throwing away a powerful means of influencing the people.

Whether headmen ought, or ought not, to have more power than at present, is a matter for serious enquiry, but need not be entered upon here.

## Revenue.

With some trifling exceptions, the sole source of revenue is the tax on grain.

Formerly this used in part to be paid in kind, (ahmonae) but this gave rise to so much deception and loss, that the plan has long since been abandoned. At present the great majority of the tax is collected by the commutation system. According to this, the average annual produce of each piece of land being estimated, the cultivator redeems that portion of it which would fall to Government. It is to be observed, that the rate of redemption is fixed very low, it being considered that the loss thus occurring is more than counterbalanced by the ease of collection, the fixity of revenue, and the checking of deception. In this opinion I entirely concur, and believe the commutation system to be eminently advantageous, both to the rulers and the ruled. The whole process is as follows. The headmen send in lists of the lands, giving the extent and probable produce of each share; these lists then may be compared with those of former years, so as to expose any fraud, and are then entered in large register-books: additional columns, shewing the tithe, in grain and in money, being added. There is then drawn out a set of tickets, forming in fact, a copy of the register; each ticket containing a memorandum as to the amount due on each share. After this is

prepared, the Assistant Agent proceeds to some appointed village; the people assemble; those of a certain village are called forward; the first name is read, the peasant comes forward, signs the register, and receives the memorandum shewing what he has to pay, and as the matter proceeds, complaints as to over estimation, &c. are frequently heard at once, and the requisite alterations made. After all this is done, another set of receipts, corresponding to the entries in the registers, is filled up; each such receipt is given by the headman to the person whose name is inscribed on it, when he pays the tax due by him. In this way, the peasant knows beforehand what he has to give annually, and he cannot be called on by the Korale to pay twice over, as used formerly to occur not unfrequently. The headmen, when they bring revenue to the Cutcherry, give in lists of those from whom they have received it, and thus, if a headman dies or is dismissed, there is no difficulty in discovering who is and who is not in arrear. These commutation settlements are made for periods of five years. It was at one time proposed that they should run for twenty years, but fortunately this scheme was abandoned, as also that of allowing the people to redeem their whole grain tax at ten or twenty years' purchase.

The taxes from chenas, tahwaloos, and lands which are cultivated at uncertain periods, are collected by estimation, that is, the growing crop is estimated, and the villager redeems the tythe at a fixed rate, which is somewhat below the market value of the grain; at present it is eight pence per parrah, the market value being from nine pence to a shilling. It is desirable to check this system so far as circumstances allow, as it is impossible to prevent deception being carried on to a great extent.

The execrable system of farming taxes has never been in use here; and except under very peculiar circumstances I should deplore its introduction.

Fine grains pay no tax, this being a Kandian district; and really, when a man is reduced to living on "Koorakan rohties," it would be cruelty to tax him. The only thing that might induce one to lay a tax on these grains would be, the hope of forcing the people to the cultivation of wholesome articles of diet.

It appears that in 1825 the revenue realized from this district amounted to the handsome sum of eleven pounds, thirteen shillings and five pence half-penny, and from that time up till 1833, it seems to have averaged only £129. 13*s.* 5*d.*; after this period, however, it rose steadily and rapidly, and now nearly if not quite covers the expenses.

Last year [1852] the grain revenue amounted to £1735. 4*s.* 5¼*d.*, and the whole real revenue (exclusive of road tax) to £1874. 16*s.* 9¼*d.* This year these items amount to £1021 1*s.* 5*d.*, and £927. 4*s.* 4¾*d.* respectively.

Two causes will account for this decrease.

1. Within the two previous years almost all arrears had been collected.

2. Last year murrain prevailed to a lamentable extent, and so many of the draught cattle died, that large quantities of land were left uncultivated; and as the people are naturally improvident, they were at once reduced to great distress. On the other hand, the amount due for grain commutation by the settlement just closed, contrasts favourably with that which preceded it, shewing an increase of £74. 8*s.* 0½*d.* A slight examination will leave no doubt that this district is rapidly increasing in wealth and importance.

## Crime.

The people of Noowerakalawiya are the quietest and most gentle I have had the fortune to meet. It is true they quarrel a good deal, but these squabbles are generally of the most trifling kind; the parties after exhausting their list of abusive

terms, pull each other's hair, then shriek and run away from each other, and so the matter ceases. Serious assaults, robberies, murders, are all but unknown, and during three years I have not had to punish one native of the district for pilfering.

Cattle stealing used to prevail to a great extent, but has been much checked since this matter was placed in the hands of the District Judges. It is still carried on to some extent on the borders of Seven Korles and (latterly) of Manaar, but three fourths of the charges now investigated prove utterly false.

The people are fond of litigation, but not I believe to the same extravagant extent as elsewhere, and numerous disputes are settled by reference to the Assistant Agent without going to the Courts of law at all; and some such system as this seems to be infinitely the best adapted to the people.

## Future Prospects.

The soil on the major part of the District being good, there can be no doubt that agriculture will receive more and more attention. Roads are being formed in every direction, and if Government took up the matter of Tank repair with spirit, I believe that Noowerakalawiya would profit thereby fully as much as any district in Ceylon.

## *On the Principles of Singhalese Chronology.* By the Rev. C. Alwis.

Time is that abstract duration which pervades all ages, without either a commencement or conclusion. It partakes of many of the most sublime attributes of the Supreme Being, such as eternity, invisibility, omnipresence, immaterialism, and so forth. There is some method of computing it amongst every nation. This computation and adjustment of time form the principles of Chronology.

The most natural division of time seems to be into that of days. Day is called in Singhalese *dawasa.* The interval between two successive risings of the Sun is a *dawasa.* Seven dawasas are reckoned into one *satiya* "a week." The days of the week, as among many other nations even in the West, are appropriated to seven gods, and are called by their names: thus *Iridā* "Sun's-day," *Sandudā* "Moon's-day," *Angaharuwādā* "Mar's-day," *Badādā* "Mercury's-day," *Brahaspatindā* "Jupiter's-day," *Sikurādā* "Venus'-day," and *Senasurādā* "Saturn's-day."

Dawasa is divided into *dawāla* "the day time," and *rāttriya* "the night time." Dawāla is from the rising to the setting of the Sun; and rāttriya begins with the setting of the Sun and continues till his rising. From the rising of the Sun to his arrival at the meridian is called *pera-waruwa* "the forenoon;" and the interval between the meridian and the setting of the Sun is termed *paswaruwa* "the afternoon." The noon or midday is called *maddahana.*

The night is divided into three equal portions called *yama* "the watches." The first watch is called *perayama* or *hendæ yāmaya.* The second or middle watch is called

*maddima yāmaya;* and the last watch is called *puschima yāmaya,* or *pāndara yāmaya.* The midnight is called *maddima rāttriya.* The time during which the rays of the Sun's light fall upon the ground before his rising above the horizon, is termed *aluyama,* and that of his rising is designated *pāndara;* the morning in general is called *udaya.*

The natural day is divided into 60 equal portions, each being called *pæya,* equal to 24 English minutes. Each pæya is divided into 60 *winādies,* and each winādi into 60 *tatparas.*

A portion of time consisting of 2½ pæyas is termed *Hōrā,* answering exactly to the Greek and Roman word *hora,* an hour. Astrologers suppose that the same seven gods, to whom the supervision of the days of the week are appropriated, preside over each successive seven *horas,* beginning from that one to whom the day belongs, but in the following order, namely, Sun, Venus, Mercury, Moon, Saturn, Jupiter and Mars. Thus, on Sunday the first hōrā is of the Sun, the second is of Venus, and the third is of Mercury, and so forth; on Monday the first hōrā belongs to the Moon, the second to Saturn, and the third to Jupiter, and so on.

The firmament studded with constellations and stars, apparently in an incessant motion from East to West, is divided into twelve portions, each called *rāsiya,* "a sign." The names of these twelve Rāsies, together with the time during which they emerge out of the horizon, are as follows.

| NAMES | P. | W. | | H. | ′ | ″ |
|---|---|---|---|---|---|---|
| Mēsa............... | 4 | 19 | Aries......... | 1 | 43 | 36 |
| Warsabha........... | 4 | 43 | Taurus......... | 1 | 53 | 12 |
| Mithuna............ | 5 | 17 | Gemini........ | 2 | 6 | 48 |
| Kataka............. | 5 | 29 | Cancer......... | 2 | 11 | 36 |
| Singha............. | 5 | 15 | Leo........... | 2 | 6 | 0 |
| Kanyā.............. | 4 | 57 | Virgo......... | 1 | 58 | 48 |

| NAMES. | P. | W. | | H. | ′ | ″ |
|---|---|---|---|---|---|---|
| Tulā................ | 4 | 57 | Libra ......... | 1 | 58 | 48 |
| Wurchika........... | 5 | 15 | Scorpio........ | 2 | 6 | 0 |
| Dhanu............... | 5 | 29 | Sagitarius..... | 2 | 11 | 36 |
| Makara.............. | 5 | 17 | Capricornus... | 2 | 6 | 48 |
| Kumbhu............ | 4 | 43 | Aquarius..... | 1 | 53 | 12 |
| Mina................. | 4 | 19 | Pisces......... | 1 | 43 | 36 |

From this table it appears that all the Rāsies are not of equal size, consequently some take a longer time than others in passing through the horizon.

Of the twelve Rāsies, that called *Singha*, "Leo" is appropriated to the Sun, and the one next before it, called *Kataka* "Crab," is given to the Moon; the rest of the Rāsies are appropriated to the five ancient planets in the order of their position with regard to the Sun. Thus, Mithuna and Kanyā, the Rāsies or signs bordering on each side of the mansions of the Sun and Moon, belong to Mercury. The two beyond these on each side, namely Warsabha and Tulā, are appropriated to Venus; the two beyond these, namely Mēsa and Wurchika, belong to Mars. The next two, Mina and Dhanu, are the mansions of Jupiter, and the remaining two, Makara and Kumbha, belong to Saturn.

The Sun, the Moon, and the Planets, move through these Rāsies in their courses.

*Aurudda* "the year," is the time during which the Sun travels through all the twelve *Rāsies* in his course, beginning from the first point of Mēsa Rāsi. Sixty years make a cycle. The number of the cycle of any given year is found by adding 11 to the given year of Saka (which is 78 years less than the Christian æra) and dividing the sum by 60. The remainder, after this process, is the number of the cycle of the given year; and if nothing remains, 60 is the cycle.

The Singhalese have four æras by which they date the

year of any event. That which is most familiar to the generality of the people is the Saka Warusa, which is the year of some King of the continent of Asia, whose name was Saka, and who was said to be the head of the royal race of Yawana (Grecian.) The present year (A. D. 1855) is the 1777th of the Saka Warusa, 78 years later than the Christian æra.

They use the year of our Lord Jesus Christ in all the public documents at present; and the inhabitants of the towns and their neighbourhood are more familiar with this than Saka Warusa.

For religious purposes they use Buddha Warusa, the year from the death of Gautama Buddha, 621 years before Saka Warusa. Consequently, the present is the 2398th year of Buddha Warusa.

In most of the Medical, Astronomical, and other scientific works of very ancient dates, which we have in Sanskrit from the Wēdas of the Bramins, another æra, called Kaliyuga Warusa, is used. Kaliyuga is the last of the four last yugas or ages of the world, which, the Singhalese say, have passed. The commencement of the Kaliyuga was 3179 years prior to Saka Warusa. The present year of the Kaliyuga is the 4956th. The whole period during which it is to exist is 432,000 years. The yuga or age that preceded Kaliyuga was called Dwāpara, and existed twice as many years as the Kaliyuga, namely 864,000. The one before that was Trēta, which existed 1,296,000 years, being three times as many as the years of Kaliyuga. And the one preceding this was Krēta, the duration of which was four times that of Kaliyuga, namely 1,728,000 years. Before these four yugas, the present Kalpa or the period of the world, is believed to have existed during 27 divine yugas of an innumerable number of years.

The length of a year is 365 days, 15 pæyas, 31 winādies, and 15 tatparas. The commencement of the Singhalese year falls generally about the 11th of April. To find the exact moment at which any given year commences, or the moment at which the Sun enters into Mēsa Rāsi, the following is the rule. Subtract 1244 from the Saka æra, and by the remainder multiply 365 d. 15 p. 31 w. 15 tat.; and to the product add 1615536 days 59 p. 45 w. 30 tat.; and then throw off as many 7 days as possible from the sum. The commencement of the year or the Sun's entering into Mēsa Rāsi is so many days after Friday, as appears in the remainder of days pæyas winādies and tatparas. If there is no remainder in the place of days, the commencement of the year is on Friday; if one, on Saturday, and so forth. Thus, to find the commencement of the present Singhalese year, the year of Saka 1777 (A. D. 1855), subtract 1244 from 1777 which leaves a remainder 533, by this multiply 365 d. 15 p. 31 w. 15 tat., which gives a product of 19682 days 52 p. 36 w. 15 tat.; then add to this product 1615536 days, 59 p. 45 w. 30 tat., which will give a sum of 1810219 days, 52 p. 21 w. 45 tat.; after this, throw off as many seven days as possible, when there will be a remainder of 5 d. 52 p. 21 w. 45 tat. The commencement of the year is thus 5 days after Friday, namely, on Wednesday, at 52 pæyas and 21 w. 45 tat.: which, according to English calculation, is Thursday 2 h. 56′ 42″ A. M., or 3 minutes and 18 seconds before 3 A. M.

*Māsē* "the month," is about the 12th part of a year, and is of two kinds, the solar and lunar. The solar month is the time during which the Sun continues in any one of the 12 Rāsies.

The moment at which the Sun enters into any one of the twelve Rāsies is found by the following rule:—to the days

pæyas and winādies of the Sun's entering into Mēsa Rāsi, add the number of days, pæyas and winādies opposite to the required Rāsi in the table below, and leave off, if possible, seven from the number of days, and the remainder is the day, pæya and winādi after Friday, when the Sun enters that Rāsi.

| | D. | P. | W. |
|---|---|---|---|
| Warsabha............... | 2 | 55 | 32 |
| Mithuna................. | 6 | 19 | 44 |
| Kataka.................. | 2 | 56 | 22 |
| Singha........ ......... | 6 | 24 | 34 |
| Kanyā............ ...... | 2 | 26 | 44 |
| Tulā............. ...... | 4 | 54 | 6 |
| Wurchika............... | 6 | 48 | 13 |
| Dhanu........ ......... | 1 | 18 | 37 |
| Makara.................. | 2 | 39 | 30 |
| Kumbha................. | 4 | 6 | 37 |
| Mīna.................... | 5 | 55 | 10 |
| Mēsa............. ........ | 1 | 15 | 31 |

Thus, to find the time at which the Sun enters Mithuna Rāsi in the present year, add

| D. | P. | W. | |
|---|---|---|---|
| 2 | 52 | 22* | Sun's entering into Mēsa Rāsi |
| 6 | 19 | 44 | as found opposite Mithuna Rāsi |
| 9 | 12 | 6 | |
| 7 | 0 | 0 | |
| 2 | 12 | 6 | That is, on Sunday at 12 p. 6 w. |

According to English calculation, 10 h. 50′ 24″ A. M.

---

* In leaving out the tatparas, if there are 30 or more, one is added to the winādies.

The length of each of the twelve solar months, or the time during which the Sun continues in any one of the Rāsies, is given in the following Table.

| | D. | P. | W. |
|---|---|---|---|
| Mēsa.................... | 30 | 55 | 32 |
| Warsabha.............. | 31 | 24 | 12 |
| Mithuna................ | 31 | 36 | 38 |
| Kataka.................. | 31 | 28 | 12 |
| Singha.................. | 31 | 2 | 10 |
| Kanyā.................... | 30 | 27 | 22 |
| Tulā....................... | 29 | 54 | 7 |
| Wurchika.............. | 29 | 30 | 24 |
| Dhanu.................... | 29 | 29 | 53 |
| Makara.................. | 29 | 18 | 7 |
| Kumbha................ | 29 | 48 | 33 |
| Mīna...................... | 30 | 20 | 21 |
| Total...... | 365 | 15 | 31 |

From this table it appears, that the Sun does not pass through every Rāsi in an equal length of time; he sojourns the longest time in Mithuna, being 31 d. 36 p. 38 w. From thence he continues less and less in every successive Rāsi, until he comes to Makara, where he passes only 29 d. 18 p. 7 w. From Makara, again, the time of the Sun's sojourn in each Rāsi successively becomes longer and longer, till he comes up to Mithuna again. The difference of the Sun's longest and shortest sojourn in these two Rāsies is 2 d. 18 p. 31 w.

The longest day here is said to be 31 p. 22 w., and the shortest 28 p. 38 w., or according to English reckoning, the longest day is 12 hours and 31 minutes, and the shortest day is 11 hours and 29 minutes. In order to find the gradual change of the different length of day and night, the following table is given.

| | P. | W. |
|---|---|---|
| Mēsa.................... | 30 | 0 |
| Warshaba............. | 30 | 38 |
| Mithuna............... | 31 | 10 |
| Kataka...... ......... | 31 | 22 |
| Singha................. | 31 | 10 |
| Kanyā......... ....... | 30 | 38 |
| Tulā.................... | 30 | 0 |
| Wurchika............. | 29 | 22 |
| Dhanu.................. | 28 | 50 |
| Makara................. | 28 | 38 |
| Kumbha.... ......... | 28 | 50 |
| Mīna.................... | 29 | 22 |

In this table, the length of the day at the time of the Sun's entering into each of the 12 Rāsies is given; the difference between this and 60 pæyas being the length of the night. The length of the day or night in any day intervening between any two days given in the table is more or less in proportion. This table is, however, constructed upon the principle that the Sun always sets first at the point in the *Rāsi-chakkra* "zodiac" opposite to his position when he rises in the eastern horizon. But as the Sun progresses about one-sixtieth part of a Rāsi from the time of his rising to that of his setting, and as the seventh Rāsi, by which he always sets, is never equal in size to that by which he rises, there is always a difference of about 5 winādies; consequently, the length of day or night given in the table occurs always about 20 days previous to that given in it.

The six months from the Sun's entering into Kataka is termed *Dakshina-Ayana* "Southern course," and the other six months from his entering into Makara, is called *Uttara-Ayana* "Northern course," because during these months the Sun seems to travel towards these directions.

This declination of the Sun is said to cause the general length of a man's shadow (in the central parts of this Island,) cast on the ground at noon for each one-third of the solar month, to be the following number of feet;—viz.:

| Month. | No. of Ft. | | | Month. | No. of Ft. | | |
|---|---|---|---|---|---|---|---|
| Mēsa........ | 1½ | 1 | 1½ | Tulā......... | 2½ | 3 | 3½ |
| Warsabha.. | 1½ | 2 | 2½ | Wurchika.. | 3½ | 4 | 4½ |
| Mithuna ... | 2½ | 3 | 2½ | Dhanu...... | 4½ | 4½ | 4½ |
| Kataka..... | 2½ | 2 | 1½ | Makara..... | 4½ | 4 | 3½ |
| Singha...... | 1½ | 1 | 1½ | Kumbha... | 3½ | 3 | 2½ |
| Kanyā...... | 1½ | 2 | 2½ | Mīna........ | 2½ | 2 | 1½ |

This portion of the shadow of a man is called *Awatchāwa,* or more properly, *awa ch'hāyāwa,* "extra shadow." Thus, the Awatchāwa for the first 10 days of the Sun's stay in Mēsa, or the 10 days after the 11th of April, is one foot and a half; for the next 10 days of the same month, it is one foot, and for the third 10 days it is one and a half. And for the first 10 days of the solar month of Warsabha, the extra shadow of a man is one foot and a half; for the next 10 days it is two feet, and for the last 10 days it is two and a half feet; and so on.

In consequence of there existing little or no difference in the aspect of the country at various seasons, the Singhalese do not recognise the four seasons of the year, as people of other countries do. The medical and astrological books, speak, indeed, of six seasons of the year, called *Irtu,* and the religious books make mention of three *Irtus:* but they are of no consequence here, as people do not talk of them on ordinary occasions.

The Lunar month is the period from the Moon's passing between the Sun and earth until she comes again between these two bodies. The names of the twelve Lunar months begin-

ning from that in which the Sun comes to Mēsa, are as follows:

| Solar Month. | Lunar Month. | Corresponding English Month. |
|---|---|---|
| Mēsa | Bak | April and May |
| Warshaba | Wesak | May and June |
| Mithuna | Poson | June and July |
| Kataka | Æsala | July and August |
| Singha | Nikini | August and Sept. |
| Kanyā | Binara | Sept. and Oct. |
| Tulā | Wap | Oct. and Nov. |
| Wurchika | Il | Nov. and Decr. |
| Dhanu | Unduwap | Dec. and Jan. |
| Makara | Duruthu | Jan. and Feb. |
| Kumbha | Nawam | Feb. and March. |
| Mīna | Mædin | March and April |

The lunar month does not necessarily begin on the same day as the solar. It begins with the day after the new moon. That lunar month in which the Sun enters Mēsa Rāsi, or that of which the full moon is nearest to the Sun's entering Mēsa Rāsi, is the first lunar month, Bak Masa.

When there are thirteen full moons in any year, the additional month is called Adhika Māsē, two of the months being called by the same name.

About Adhika Māsē there is at present a controversy, in which every one of the Budhist priests of the Island is more or less engaged. It was originated about 35 years ago, by Atthadassi Terunānse of Bentotte, who is considered to be the most learned of the Budhist priests of the day. One party maintain that the Adhika Māsē, or the additional month, ought to be in that solar month in which the two full moons occur; but the other party say, that the additional month must be next to Æsala, and ought to be called the

second Æsala, without any regard to the solar month in which the two full moons occur.

The lunar month is divided into two portions, each called *pakshē*. One, from the day after the new moon to the day of full moon, is called *pura*, "increase;" or *pūrwa pakshē*, "the former part;" or *sukla-pakshē*, "white part:" and the other, from the day after the full moon to the day of new moon, is called *awa*, "wane," or *apara-pakshē*, "the latter part," or *krishna pakshē*, "the black part." Each pakshē, is divided into 15 *tithies*. The length of a tithi varies from 53 to 67 pæyas.

The names of the fifteen tithies from the first, are Pælawiya, Diyawaka, Tiyawaka, Jalawaka, Wisēniya, Sætawaka, Satawaka, Atawaka, Nawawaka, Dasawaka, Ekoloswaka, Doloswaka, Teleswaka, Tuduswaka, and Pasaloswaka or Amāwaka. Of these two names for the last tithi, Pasaloswaka is the full moon, and Amāwaka, the new moon.

The moon's path in the firmament is divided into 27 portions, each called a Nækata, "asterism." Each Nækata is four-ninths of a Rāsi. The names of the 27 Nækatas, beginning from the first point of Mēsa Rāsi, are Aswida, Berana, Kæti, Rehena, Muwasirisa, Ada, Punāwasa, Pusa, Aslisa, Maha, Puwapal, Uttrapal, Hata, Sita, Sā, Wisā, Anura, Deta, Mula, Puwasala, Uttrasala, Suwana, Denata, Siyāwasa Puwaputupa, Uttraputupa and Rēwati. The tithi and nækata of any day or time are those in which the moon is in her course through the zodiac in that day or time. The time of the moon's passing through each Nækata varies from 53 to 67 pæyas.

The popular notion of the moon's rising or setting pæya respectively at day and night of *pura* and *awa*, and *vice versa*, is twice the number of tithie. So that on the day of

Pælawiya in pura, or the first day of the moon, she rises in the second pæya after it is day, and sets in the second pæya after it is night, in proportion to what is past out of the tithi. On Diyawaka of the pura, or on the second day of the moon, she rises in the 4th p. after it is day, and sets in the 4th p. after it is night. On jalawak of Awa, or the 4th day of the wane, the moon rises at the 8th p. after it is night, and sets in the 8th p. after it is day, and so forth. It should be noticed, that in general one tithi and nækata exhibit in one part of the day, and another tithi and nækata in the next part of the day; and so proportionably the rising and setting of the moon is changed. Although the above is the popular notion of the moon's rising and setting time, its exact moment is known accurately by the position of the moon in the Rāsi through which she passes, by a reference to the Nækata of the day in a common *lita,* "the Almanac."

Each of the four quarter days of the moon is called *pōya;* the full moon is called *Pasaloswaka pōya,* and the new moon *Māse pōya.* The first quarter is called *māse giya atawaka pōya,* and the last quarter *pahaloswaka giya atawaka pōya.* In the pōya, or quarter days, the Budhists generally refrain from worldly occupations, and engage themselves in religious works, believing, on the authority of Budha, that on these days the messengers of the god Sækkra or Indra come to the human world, observe the deeds of the people, record each man's actions distinctly in a book, and then carry it to report to their master.

The Singhalese use different modes of computing time or finding the pæya of the day. The most common way, when the sun or moon is visible, is by the shadow of a person cast on a level ground measured with his own foot. The method of doing it is thus. Leave off the awatchawa "the extra

shadow" as above mentioned, according to the time of the solar month, then double the remaining number of feet and add 12 more; and make this sum a divisor, and 180 its dividend. The quotient is the number of pæyas either from the sun-rise, or to the sun-set, as the case may be. If there be any remainder after the above division, multiply it by 60, and divide the product by the same divisor for winādies, and so for tatparas. Thus on the fifteenth day of April, in the morning, if I see my shadow to be 20 of my feet, I proceed thus to find the pæya. It being only about two days after the Sun's entering into Mēsa Rāsi, the awatchawa is $1\frac{1}{2}$ ft., which I take off, and the remainder, $18\frac{1}{2}$ ft., I multiply by two, which gives 37, I add to this 12, and the sum left is 49. I then divide 180 by 49, thus:

```
49) 180 (3 p.
    147
    ---
     33
     60
    ----
49) 1980 (40 w.
    196
    ---
     20
     60
    ----
49) 1200 (24 tat.
     98
    ---
    220
    196
    ---
     24
```

and find that the time is 3 p. 40 w. 24 t., in the morning, or, according to the English way, 28′ 10″ after 7 A. M.

A more simple way than this, though not so correct, is that

after taking away the awatchāwa "the extra shadow," the following numbers of feet stand for each pæya, either from the sun-rise, or to sun-set, as the case may be, namely 84, 49, 24, 16, 12, 9, 7, 5, 4, 3, 2, 1½, 1, ½, 0. Thus in the former case 18½ ft. after the awatchāwa has been taken away, being between 24 and 16, is between 3 and 4 pæyas from sun-rise.

To reckon the time when the sun or moon is not visible, they have a cup called pæ-tætiya, made of some kind of metal, or cocoanut shell, with a small hole in the centre, which will fill in just in one pæya when placed in a vessel of still water.

The Singhalese speak of the time of the day in a different mode from what the English do. They do not say, it is three o'clock, or three on the clock. This mode of expression must be of a comparatively recent date, as clocks and watches were not in use at a very remote period. There is an unidiomatic and corrupt way of speaking of time, among the Singhalese, in the neighbourhood of towns, inhabited by Europeans and their descendants; such as, *Dæn Kīyada? Pahayi,* "How many is it now? Five?" Meaning, "What is the hour now? Five?" This mode of conversation concerning time is unintelligible among the Singhalese people of the villages, who have less intercourse with Europeans and speak the language in its purity. Their question, in the place of "What o'clock is it now?" is thus;—"*Dæn eliwenda* (or *eliwela* or *ræwenda* or *ræwelā*) *kī pæyada?*" How many pæyas is it now to be morning? (or since morning, or to be night, or since night?) Sometimes, speaking with respect to the feet of the shadow of the Sun or Moon, they say: "*Dæn Ira* (or *Handa*) *mudunata enda* (or *hærilā*) *dolos piyawaray.*"—It is twelve feet the Sun (or Moon) to come to the top (or having turned.)

## *Remarks on the supposed identity between Nàgasèna and Nagarjùna.* By James de Alwis, *Esq., Assistant Secretary.*

Oriental scholars have long entertained the belief,* that *Nàgasèna,* the hero of Milindapprama, and *Nagarjùna,* the character who holds a distinguished place in the Raja Tarangini, were identical. Curiosity, however, led me to read the original passage on the Cashmirian history, and the discordance in the rythm of several lines, to examine it closely. In the course of that examination, I have detected several grave errors in the construction put upon the passage in question, which I beg now to record, with the object of awakening the attention of Oriental scholars, who are better qualified than myself, to the investigation of a subject, which is not only interesting but difficult.

The passage in question, which I extract from the Asiatic Researches, Vol. XV., p. 111, is the following:—

Tè turushkànvayòdbhùtà ; *pi* punnyàshrayà nripàh
Shuskak*shè*ttràdi dèséshu ; matha chaittyàdi chakkrirè.
Pràjjiyè ràjjyakshanè tèshàn ; pràya*a*Kàshmìra mandalan
Bhòjjya màstè*sa* *b*owddhanàn ; pravrajjyòrjita tèjasan.
Tatò bhagavatàh Sàkkya ; Sinhasya puranirvritè
Asmin saha lóka dhàtaw ; sàrddhan varsha satan hyagàt,
Bòdhisatvascha dèshèsmin ; nèka bhùmìsvarò *bhùt*
Sa*cha* Nágàr'junah srìmàn ; shad*arhatva* nasansrayì.

Professor H. H. Wilson, in Appendix VII. to his Essay on the Hindu History of Cashmir, thus translates the passage which I have above extracted:

"They (Hushka &c.,) of *Turushka* descent, were princes, asylums of virtue ; and they founded colleges and planted sacred trees, on Sushca and other places. During the period of their reign, the whole of Cashmir was the enjoyment of

* See Bombay Asiatic Society's Journal, No. VIII. October 1844, p. 96.

Buddhas eminent for austerity. After them, when 150 years had elapsed from the emancipation of the Lord Sâcya Singha in this essence of the world, a *Bodhisatwa* in this country, named Nàgârjuna, was *Bhumiswara,* (Lord of the earth,) and he was the asylum of the six Arhatwas."

The Hon'ble Mr. Turnour, with that zeal in the cause of oriental research, for which he was eminently distinguished, and with a view to identify Nàgàrjuna with Nàgásèna, and to adjust the date here given to that assigned to the latter in Bhudhistical annals, has* corrected the text in two most important particulars: 1st, by prefixing a *d* to *sardhan-varsha-satan,* "one hundred and fifty years," and converting the passage into *dasardhan varsha satan,* "half-a-thousand years;" and 2ndly, by giving to the concluding portion of the Sanscrit quotation, which Professor Wilson has rendered "He was the asylum of the six Arahatwas," a negative signification—conveying that he did *not* recognize (*i. e.* he *denounced*) the six Arahatwas; and by identifying them with the six Tirtakas mentioned in the Milindapprasna. The entire translation which Mr. Turnour has offered, runs thus:

"They (Hushka, Jushka, Canishka) of Turushka descent were princes, asylums of virtue, who founded colleges and chetiyas in Suscha and other countries. During the entire period of their rule, the whole of *Cashmir* was under the spiritual controul of ascetic sages, eminent for their rigid piety. Thereafter, when (half a thousand) five hundred years, had elapsed in this (land) as well as the whole world, from the period that the sanctified Sakya Sinha attained *Parinirvritti,* the pre-eminently endowed *Bódhisatwa* Nàgârjuna, became the (spiritual) Lord of this and many other lands, and did *not* recognize (*i. e.* denounced) the six Arhatwas (who were his contemporaries.)"

Before remarking on the important alterations thus effected by Mr. Turnour, it may be necessary to examine the original text, and to notice the fact, that it is written in that most frequent and useful form of Sanscrit verse called the *Anushtubh*—a metre "in which the great body of metrical composition, whether narrative or didactic, exists"—a metre too, in which "the laws of Manu, the Mahabharata, the

* See Bengal Asiatic Society's Journal for 1836, p. 530.

Rámáyana and the Puranas are written." The species under notice is thus defined :—

"The Anushtubh stanza is divided into four padas of eight syllables each. In its most regular form, the first foot is any one except a tribrach, the second may be a dactyl, a tribrach, cretic or anapæst; the other two syllables are indifferently long or short."

Another peculiarity in the formation of the *Anushtubh* is, "that the fifth syllable of each line is short, the sixth long, and the seventh alternately long and short; whilst the first four syllables and the eighth are arbitrary."

By reducing the passage in question into symbolical figures, it will be perceived at a glance, that there are three prosodial errors;—one in the 2nd line; another in the 11th; and a third in the 14th; whilst the 12th line, in which it is stated that a *d* is omitted before *shàrdan*, and the 16th, which is said to contain a denunciation of the six Arahatwas, are clearly free from prosodial errors. Two of the errors which I have noticed are of a trifling character, as they may easily be rectified without adding anything to the sense. The letter *a* in *api* "afterwards," with which the 2nd line of this passage commences, is omitted; when added, the line runs thus :—

*Api* punnyáshrayà nripàh :— — ⌒ ⌒ — ⌒ — ⌒ = 8.

The 14th line is thus correctly rendered in the Nagari version of the Raja Tarangani printed at Calcutta in 1835; and I at once adopt it, as it is free from error.

Nëka bhûmìswarò *bhavat* : ⌒ — ⌒ ⌒ — ⌒ — ⌒ = 8.

In the 11th line there is an unaccountable confusion, both in the Nagari version, and in the extract published by Professor Wilson; and I confess that it is impossible, without materially altering the sense, to redeem it from the palpable inaccuracy of rendering the 5th a *long*, and the 6th a *short* syllable.

Asmin saha lòka dhàtaw : ⌒ ⌒ — — ⌒ — ⌒ ⌒ = 8.

I have thus examined the entire passage in reference to the rythm. It therefore only remains, to consider the correctness or otherwise of the criticisms offered by Mr. Turnour.

With regard to the 12th line—if, as stated by Mr. Turnour, a *d* with its inherent vowel is introduced, and the whole line is thereby rendered *dasàrdhan varsha satan hyagàt;* it will be perceived that we not only destroy the harmony of the entire verse, but render the line 9, instead of,—as it is, and ought to be—8 syllables.

Sàrdhan varsha satan hyagàt: ⌒ ⌒ ⌒ — — ⌒ — ⌒ =8.

As to the last line,—"shadarhat*va na*-sanshrayì;" it is stated that Professor Wilson has lost sight of the negative *na.* Mr. Turnour can scarcely be deemed correct in offering this criticism; and on reference to the text we also find that Professor Wilson has incorrectly *extracted* the passage. It should be (see original) *Shadahar vana sanshrayì,* which means, "he was one who spent six-days in the wilderness." To render the passage as Mr. Turnour has translated, *i.e.* "he denounced the six Arahatwas"; the word "*arhatwa*" should be either *arhatwan,* the accusative; or *arhatwasya,* the genitive.

The passage given in the Nagari original furnishes no great objection in point of grammar—certainly none in regard to rythm; and is altogether such as may be reconciled with the doctrine of *Nìròdha Samàpatti* in Budhism, by which it was incumbent on the ascetic, who had attained the state of "Arahat" to spend six days in seclusion in the wilderness, and on the seventh to leave it in search of food.

Seeing, therefore, that the two most important coincidences between the Cashmirian and Budhistical annals to which Mr. Turnour refers, do not really exist, it may be inferred, that his other reasons for the identity of Nagarjùna and Nàgasèna,

founded especially, as they are—on "hypothetical reasoning," lose much of the weight due to them, if they do not altogether fall to the ground.

I shall, however, postpone a consideration of them to an early opportunity, contenting myself at present with a translation of the passage in question, which I append:—

"It is said that they (Hushka, Jushka, Kanishka) of *Turuskà* descent, were princes, who were embued with the virtue of merit,* and who afterwards founded Colleges, chètiyas, &c., in *Sushkalèttra*† and other countries. During the period of their extended reigns‡ the country of *Cashmir* was greatly under the spiritual control of Budhistical ascetics, preeminent for their rigid piety. Thereafter, when a century (one hundred years) and a half had elapsed in the essence of this world, after the sanctified *Sàkya Sinha* obtained [*Puranirwritte*] § final emancipation, there appeared in this country a *Bhodisat* (anèka Bhumìshwara) lord of many lands. This distinguished personage, who was named Nagàrjuna, usually spent six-days (in the week) in the wilderness,"||

* "Embued with the virtue of merit" means, that they betook themselves to a course of religious austerities, by which sin was avoided, and attained a status for acquiring merit.

† *Sushkalèttra'di.* I have translated *Sushkalèttra,* &c. This is the form in which the word occurs in the Nagari version. It may be either one name or two. And this expression, rendered Shushkakshèstradi by Professor Wilson, may also stand for one or two names. It may either stand entirely as a name, or be rendered the *Valley* (Kshettra) of Sushka, &c.

‡ "*Extended reigns.*" The word *pràjjiyè* rendered by me "extended," is interpreted by Mr. Turnour to mean "entire," and it is omitted in the Translation of Professor Wilson. It is however, remarkable, that this word is ill-adapted in its present position as an adjective to qualify *Ràjjyakshanè.*

§ *Puranirwritte.* This is undoubtedly "Paranervitta"; and Professor Wilson's alteration was as indispensable as correct.

|| *Shadahar vana sanshrayè* is rendered in Professor Wilson's extract, *Shadarhatwa nasanshraye.* See my remarks in the Text.

## *An Introductory paper on the Investigation of Singhalese Music.* *By* Louis Nell, *Esq.*

The Ceylon Branch of the Asiatic Society, formed to institute and promote enquiries into the Arts of Ceylon, together with the social condition of the present and former inhabitants of this Island, would embrace within the scope of those enquiries, the investigation of Singhalese music,—since, it is peculiar to the Singhalese, and because it is calculated to throw some light upon the social condition of the people. Their Music is as peculiar to the Singhalese, as the music of any other people, to them. The Oriental enjoys his rude melodies, as heartily as the European, the music of the West. But the difference is so great between the barbarous and the civilized art, that the former becomes a subject of curiosity to the votary of the other. Though, Singhalese music, therefore, may be of no great intrinsic value, it is deserving of investigation as a national art, and as an illustration of the social condition of the Singhalese people. It is hardly necessary to illustrate this position, by alluding to the marked characteristics of Scottish and Irish music; or by contrasting their national character with that of the music of Italy. Nor, will it be necessary, to make more than a passing allusion, to the effects of musical culture in Germany, in the Tyrol, and in Switzerland. It will not be denied, that the influence of music is calculated to take hold of the affections: nor will its moral influence be denied, when the value which has been placed on it by Religion, is but for a moment considered. The investigation of Singhalese music, therefore, is worthy of the attention of this Society.

2. With regard to the estimation, in which music was held, in comparison with other branches of knowledge, it may be observed ;—That the Rajah Ratnacri, ascribes to a favorite Singhalese Prince, a knowledge of the following branches of Eastern Science ;--1. Oratory; 2. General knowledge; 3. Grammar; 4. Poetry; 5. Knowledge of Languages; 6. Astronomy; 7. Knowledge of giving counsel; 8. Of obtaining Nirwāna; 9. The knowledge of good and evil actions; 10. Of shooting; 11. Of Elephants; 12. Discernment of thoughts; 13. Discernment of invisible beings; 14. Knowledge of words; 15. Knowledge of history; 16. Of the law; 17. Rhetoric; and 18. Medicine. (*Upham II.*, 99-100.) It is probable, that had music been held in higher estimation by the partial historian, he would have added it to the others, by which the memory of Prackramabahoo the 3rd, is adorned in the page of Singhalese history.

3. It is probable that many attempts have been made to reduce Singhalese melodies to European notation; but the silence which has been hitherto preserved on the subject, must be interpreted as a tacit acknowledgment of failure. The fullest account of native music and musical instruments, is that given by Davy, whose work on Ceylon ranks next to that of Knox for originality and correctness. Davy gives a description of seven native musical instruments,—1. The Berrigodea, 2. The Doula, 3. The tom-tom, 4. The Udakea, 5. The Tallea,—6. The Horanawa; and 7. The Vennavah. It may be here remarked, that all these are Singhalese instruments; and that the brother of Sir Humphry Davy, with the carefulness of a scientific enquirer, has not confounded them with Malabar instruments, or added any foreign ones to his enumeration. It would be unadvisable, perhaps, to incorporate the remarks of Dr. Davy, in this paper, since the work itself could always be referred to.

4. My succeeding remarks will be of a more practical nature, as they were suggested by actual experiments; the results of which, however, have not been extensive enough to justify publication.

It will follow from observations already made, that no such results have been arrived at by writers on Ceylon, as were obtained by Lane, in his "Modern Egyptians." He gives a few instances, in European notation, of Egyptian airs, including the "call to prayer" at Cairo, the style of chanting the Koran, and some specimens of secular songs. In attempting such results in Ceylon, the very first difficulty would be, the unsuitableness of the European musical scale to express the exact nature of the sounds, which form the strains of native melodies. This is, perhaps, not generally known. To explain the reason would involve a consideration of the leading principle of musical acoustics, and of the theory of the musical scale. But before doing so, a favourite speculation must be dismissed. It is a favourite method on such enquiries as the present, to speculate on the probable character of Hebrew, ancient Egyptian, and Grecian music. This course, though seemingly going to the root of the matter, will give no practical results. I believe I am not incorrect, in stating, that all certainty in the history of music dates from the discovery of our modern notation. This may be described, as, the system of designating musical sounds by points, distributed on lines and the spaces between them; which system, when once acquired by a musician, enables him to read melody and harmony, and to reproduce exactly what has thus been written. This definition, I believe, will at once exclude any ancient Eastern notation, as well as the system of using prosodial feet.

5. The application of the principles of musical-acoustics to this investigation, may be illustrated as follows. We

shall take the instance of a person, endowed with a correct ear, and possessing a moderate degree of skill in performing on the German-flute. We shall, also, suppose him to listen, with curiosity, to the performance of a native musician; and to endeavour to catch the air being played, on his own instrument. To any one, who has tried the experiment, it is needless to foretell its failure. Let us suppose our amateur, to ask himself the reason, why? The easiest solution of the difficulty will be found in a comparison of the two instruments. Not in the finish and perfection of the one, and the native rudeness of the other; but in the acoustical proportions of both. He will find, to his surprise, that the vents of his own instrument are apparently placed in the most arbitrary manner, with regard to their relative positions; while on the other hand, the despised native instrument is vented with more mathematical regularity. In seeking a scientific explanation, we should begin from the most elementary principles.

6. Musical tones are supposed to be the results of ærial vibrations, proceeding from a central vibrating body. Under the influence of the same motive force, the relative number of vibrations has been found, to be in the inverse ratio of the dimensions of the vibrating body. Thus, in the case already considered, the relative number of vibrations (producing the different notes) is in inverse ratio to the length of the column of air in the flute. The average diameter of the flute throughout its length being supposed to represent an uniform diameter, and beginning by closing all the vents, as each successive vent is opened, the length of the column of air in the flute tube is reduced in the same proportion. Sounding the instrument with the same force, it will be found, that the shorter the column the more acute is the note. And, as already stated, the vents being placed at

irregular distances, the musical sounds produced, are at irregular intervals from each other. But the native instrument, having its vents bored at regular distances, will emit notes at regular intervals of acuteness. The reason why the sounds of the latter are so unpleasant to our ears, will appear, when we consider the theory of the musical scale.

7. Taking the natural scale of C major, we find, that it consists of seven unqualified notes, designated by the seven first letters of the alphabet, in the following order, C, D, E, F, G, A, and B. The intervals or musical distances between these notes are not equal, since those expressed as $\frac{C}{D}$, $\frac{D}{E}$, $\frac{F}{G}$, $\frac{G}{A}$, and $\frac{A}{B}$, are known as tones; while those expressed as $\frac{E}{F}$ and $\frac{B}{C}$ are half tones. On examining the German-flute, the vents will be found to bear a corresponding relation to each other. Besides this peculiarity, it has been found, that the scale of seven notes, possesses another inequality. Dividing the scale into two tetrachords, expressed as $\overline{\text{C. D. E. F.}}$ and $\underline{\text{G. A. B. C}}$,—it is asserted, that there is not a strict mathematical equality between the two divisions. Though all assume this equality for practical purposes, there seems to be reason to suppose, that in this want of symmetry is hidden, a key to the difficulty of tuning compound instruments like the Organ and the Piano-forte. And I further beg to remark, that the necessity for what are called "the golden rules" of harmony, has probably arisen from the difference, thus established by nature. There is no doubt, that the scale of intervals, as above described, is pleasing to an European ear. When it is considered, also, that in the course of improvement, the European instrument must have resulted by gradual perfection from its rudest and simplest form,—we should consider it, as the result of endeavours tested by the criterion of a good ear, and assimilated to the standard of existing ideas. The native musician, however,

by a timid reliance on mathematical intervals, has established an unnatural scale, to which his ear has been attuned by the force of habit. The European instrument is the creature of science: the native art is the creature of its instrument.

8. The scales of European and native music, are therefore, essentially different. And the idea which is sometimes entertained, that Singhalese music is in the minor keys, is a libel on the music of the West. European airs, both in the major and minor scales, are vented by the same instrument. Thus, there are intermediate vents for the chromatic semitones, introduced in the 8-keyed flute. The notes sounded by these vents may accidentally coincide with those produced on a native instrument; but the acoustic and musical intervals will be found essentially different.

9. It follows from the preceding considerations, that in investigating Singhalese music, the most perfect native instruments should be obtained,—their gamut ascertained;—and, if necessary, a new system of notation adopted, every note of which should have a defined value and relation to the European musical scales. In obtaining instruments, Tamul ones should not be confounded with Singhalese. Tamul music is, I have no hesitation in saying, essentially diatonic in its character. And I could illustrate this by quoting an instance of an air, which I have myself heard sung by Malabars, which has been set to English words, and also incorporated in a set of Quadrilles by the omnivorous Jullien. It is well known, also, that Hindoo airs have not only been written in the European notation, but harmonized; which latter circumstance alone would be a test of unfailing efficacy.

10. In conclusion, I may indicate the means, by which I consider the investigation, proposed, could be carried out by this Society.

1st. By the addition to the Society's museum of a complete collection of Singhalese instruments, duly authenticated.

2ndly. By the contribution to the Society's Journal, of short accounts of native musical notation.

3rdly. By the reduction to writing, of native melodies, using, if necessary, a peculiar musical scale.

The enquiry should be carried on with scientific curiosity; and the prejudices of the native should not be ridiculed, who delighted with his tom-tom, stops not, to enquire the cause of his enjoyment. To him "nothing is so tranquilizing as sweet poetry and the gentle Udakea."

*A Synopsis of the Sâiva Siddântam.* *By* M. Coomarasamy, *Esq., Advocate.*

Of the various systems of Philosophy in which Hindu literature abounds, one of the most important is *Sâiva Siddântam.* Although the doctrines which it propounds are strictly esoteric, and calculated for the comprehension and enlightenment only of those who have been initiated into its mysteries, yet it is this system which forms the groundwork whereon the huge fabric of Hindu popular theology is based. It thus becomes the fountain head, whence the religious creed of millions of Hindus in India and Ceylon is derived. As such, it is worthy the attention of the public. The subject however, is too extensive to be dealt with, in all its ramifications, within the limits of this contribution, and this crude attempt will therefore be confined to a rough pencilling out of the most prominent features of this vast panorama of literary and metaphysical grandeur.

It aspires to a divine origin, and assumes the authority of a direct revelation from God, it being asserted that "Sivan (God), through his chamberlain *Nanti,* revealed to *Sanatkumaran,* in consequence of his high devotion, the system of sacred science, called *Raûrava Agamam.*" This Agamam is the principal authority on this subject, but the matter contained in it has likewise formed the theses of innumerable treatises of extensive learning and research, written by some of the most highly gifted men of genius of both ancient and modern Hindustan. The Tamil literati of Southern India have been particularly active in this department of human

knowledge; and the results of their labour have been handed down to posterity in works clothed with the best, but the most difficult, strains of the rich and lofty *Shen* Tamil.* Amongst these, *Siva Gnâna Pōtham*, by *Meykanda Nâyanâr*, *Siva Gnâna Sitti*, by *Arunanti Nâyanar;* and *Sivapprakâsam*, by *Umâpathi Asâryar*, are held in the highest esteem. Our information will be traced chiefly from these sources.

The style of these writings is didactic, and they contain the best examples of Hindu dialectics, which, *en passant*, are considered by some to be at least an expansion of the syllogism of Aristotle, if not the origin thereof. It is no easy task even for the learned amongst the Tamils, to understand fully, and expound clearly and correctly, these elaborate treatises; and it must be confessed, that the effort to reproduce the ideas and sentiments contained in them, in an English garb, and in a manner acceptable and interesting to all, is not less difficult.

---

*Sâiva Siddântam* professes to treat of

I. *Pathi*——God.
II. *Pasu*——Soul.
III. *Pâsam*——†

An accurate and complete knowledge of the nature and bearings of these three subjects, denominated otherwise, *Tripathârtham*, is of essential consequence, in the eyes of Hindu *Savans*, for the attainment of the only true object of this life —— the *Mutti*, or heavenly bliss in the other.

God, Soul and Pâsam are the three eternal and imperishable entities, whence the universe and all its chequered phenomena have sprung forth into existence, and whereinto all and every one of them will be ultimately resolved.

---

* There are two kinds of Tamil—the one, High Tamil, called *Shen* Tamil—the other, Low Tamil, called *Kodun* Tamil.

† (Lit. fetter, chain,) that which keeps the soul originally in a state of bondage and ignorance. This will be more fully explained hereafter.

Attention will be directed to each of them in their order.

## I. *Pathi*——GOD.

*Pathi* is but one of the many names by which the supreme God is known to the Hindus. He is also called *Brahm, Parabrahm, Para Sivan.* The last term gives the characteristic name to the School of Indian philosophy under notice.

The existence of such a being, as the Creator of the World, is proved by means of various arguments. One of these happens to be identical with the argument which was first advanced by Socrates, but afterwards fully expounded in Paley's memorable work on Natural Theology. It is comprised in the following stanza from *Siva Gnâna Sitti.*

" As the whole world which is known under the designations of *He, She, and It,* comes into existence (without having existed previously), exists, and is destroyed, in an *orderly* manner, (it follows) that there is one who is the creator of this world, and who is the beginning and end in himself. His existence is permanent, and he is in the form of a spirit freed from (*Pâsam*) evil from eternity."

This stanza admits also of a construction from which some commentators raise a fresh argument for the necessity of a creator of the universe. The reasoning is to the following effect :—

1. The world is not eternal : *consequenter,*
2. It had a commencement and did not exist before such commencement : *Ergo,*
3. It could not have created itself; it requires some cause other than itself to bring it into existence.

The nature of God is to the following effect.

" Though God pervades the whole world, yet he is other than the world; for he is spiritual, and the world is material. As sound and the tune, so God and the world. As sound

is to the tune, filling all its notes, so God is to the world, pervading all its forms.

As the fruit and the flavour, so God and the world. As flavour pervades all parts of the fruit, so God pervades the world from the first.

He is in intimate union with the Soul, yet he is other than the Soul.

He is eternal, pure, has no equals or superiors.

He has neither qualities, nor names,—is omnipotent; is omniscient; is the source of understanding to innumerable souls; is illimitable in his nature; exists in the shape of *Gnânam* (divine wisdom); is the form of happiness; is difficult of access to unstable worshippers, but is easily approached by those who worship in the regular course; and shines as the least of the little and the greatest of the great."

The proof for the existence of a Creator, and the refutation of the tenets of *Lokâyuther*, (the Indian Epicurean philosophers), and of other sects who maintain atheism, and attribute the world to chance, occupy many stanzas teeming with apt illustration and ingenious arguments in *Sitti*. The next subject in order is

## II. *Pasu*——SOUL.

The existence of a soul within the human organism, and as different from the 'mortal coil,' is established by what is called "*Olivu*," the rule of exception, in Hindu Logic. The argument on this subject is as follows:—

A man says "this thing is mine," "that thing is not mine." Here it is evident that there is a thing owned or not owned, and a man owning or not owning. In the same manner, it is often said "this is my body," "this is my face," "this is my hand." Here it is obvious that there exists something apart from the body—the face and the hand—and owning them.

This is the soul. Again it is usual to say "I thought so," "I did so," "I said so." Here also there exists something other than the thought, the deed, and the saying. This something is the Soul.

There are also other arguments given for the existence of the human soul. These are based chiefly on the phenomena of Death and Sleep. They are to the following effect:—

1. At Death, all animation becomes extinct, though the human frame is left entire; *consequenter,*
2. Animation must be traced to some other source than the human frame.
3. This source is the Human Soul.

As to the nature of the Soul. It is not God, nor an emanation from God, as the Vedântists hold. It is an individual being: an eternal one, being uncreated and immortal. Souls are not one in essence as some maintain; but are manifold and imperishable. In their primordial state they are not only unintelligent but even unconscious.

The third head of enquiry is

### III. *Pâsam*—(FETTER, CHAIN.)

This Pâsam is that which as it were binds the soul to a state of bondage, unconsciousness and ignorance, in its original state. It is subdivided into three parts. These are,

1°. *Anava Malam.*
2°. *Mâya Malam.*
3°. *Kanma Malam.*

*Anava Malam* is the source of unconsciousness and ignorance to the soul.

*Mâya Malam* is that which operates in the removal of the unconsciousness and ignorance of the soul, by becoming the material basis of the universe and Man.

*Kanma Malam* is the accumulation of merit and demerit

acquired by the souls in their previous states of development in organised forms.

The term *Malam* means rust or dirt: the three *Malams* forming the rust or dirt of the soul in its original state of non-development.

*Pâsam* exists from eternity and is imperishable, except so far as *Mâya Malam* and *Kanma Malam* are concerned. When the two latter are removed from the soul, and *Anava Malam* loses its strength, then the soul will be liberated from the grasp of *Pâsam*, and be ripe for attaining *Mutti* or heaven.

## IV.
## THE RELATION BETWEEN GOD, SOUL, AND PASAM.

God exists from eternity, alone, by himself, apart from the Soul and *Pâsam*. But the two latter are linked in intimate union with each other—*Pâsam* enveloping the Soul. This abnormal condition of the Soul is from eternity. It is unaccountable. It is a mystery. Here the Soul lies in a state of bondage, denuded even of thought.—In consequence, it is miserable and unhappy. This relation of Pâsam to the Soul is analogous to that which subsists between the husk of the paddy and the rice which it envelopes, or between the rusty coating and the copper which it conceals.

This link between the Soul and Pâsam is not, however, indissoluble. The chain will be severed —— the soul will gain its freedom. It will ultimately be drawn away from the grasp of the Archangel of Evil —— Pâsam, and be received into the bosom of the *summum bonum* —— God. It will then shine in its true and resplendent glory in the august presence of the King of the Universe —— even in mystic union with *Parabrahm*. This is *Mutti*. Here the

soul does not lose its individuality, nor is it annihilated. But it exists in *attuvetham* —— unity in duality. This is called *sâyucchiyam* —— the heaven of the *Sâiva Siddântists,* as *Nirwana* is that of the *Vedântists* and *Buddhists.*

## V. MAN.

To break through its thraldom the soul had not the power. But God, who is "an Ocean of mercy," pitied the soul in its distress. He willed that the soul should be freed from the clutches of *Pâsam,* and simultaneously with the will, the fiat went forth, that the soul should be developed in human organism, or in other words, that man should be created. In this manner the soul descends to this universe, for it is here that the course lies where the soul is to run its race from the goal of evil—*Pâsam,* to the goal of good—God. Creation is not one of the "beautiful plays of God." It is pregnant with a serious purport. Its object is the deliverance of the soul; for *Pâsam,* before it will relax its hold on the soul, demands satisfaction for the loss it sustains in parting with it. The demand has been met, by summoning this world and man into existence. And here, when he shall have "balanced off his demerit by his merit"—his evil deeds by his good deeds—he will then, and then alone, stand in a position fit for liberation.

The development of the soul in the human organism, is, according to this system of Philosophy, curious, if not interesting. It views man as a microcosm. All the essential constituents of the boundless universe are coiled up likewise proportionately in puny man. And as God is the King of the universe, so is the Soul, the King of the miniature universe—man.

Man is said to be composed of ninety-six *Tattuvams*—a word, which like many other technical terms of this school, does not admit of being rendered in English, although the

words, "category, principle, power, organ, property," approximate it in meaning. The order in which the *Tattuvams* are evolved from *Pathi* and *Pâsam,* their names and their characteristic properties, and the parts which they are intended to play in the human organism, are given with great minuteness in the works above mentioned. But notice will here be taken of only the principal Tattuvams.

By the grace of *Pathi* there was developed from *Sutta mâyei*—pure elemental matter which was united with deity from eternity—*Nâtham,* the male energy of *Pathi.* From *Nâtham* was evolved *Vintu,* the female energy of *Pathi.* And from *Vintu, Sathâkkiyam,* in which both the male and female energies inhere; from *Sâthakkiyam, Isuran,* the obscuring God, and from him, *Rudra,* the destroying God. These divine developments are associated with the soul with a view of prompting it on towards final deliverance.

For the use of these developments, and for the purpose of drawing the soul out from its state of unconsciousness, as it exists imbedded in *Pâsam,* into a state of intelligence and activity, there are evolved, from the above mentioned *Vintu,* the four *Vâkku,* which may be translated as organic bases of intelligence. These are

1°. *Sukkumei.*
2°. *Peisanti.*
3°. *Veikari.*
4°. *Mattimei.*

All these were unfolded from pure elemental matter, and by the agency of Pathi. The productions that follow were drawn out of *Pâsam*—impure elemental matter—and by the instrumentality of the divine developments detailed above.

By the grace of *Sathâkkiyam,* there are evolved from *Asutta Mâyei,* impure elemental matter,

1°. *Kâlam*—Time.

2°. *Niyathi*—Fate.

3°. *Kalei*—Continency.

*Kâlam* attaches to souls the results of past time, the fruit of the present time, and whatever is new in future time. *Niyathi* will make sure to souls their respective *Kanmam*, i. e., the due meed for their good and bad deeds. *Kalei* operates to a certain extent in the removal of *Pâsam.*

From *Kalei* are developed,

1°. *Vittei*—the power of thought. And from *Vittei,*

2°. *Râkam*—the desire to relish the pleasures of sense, which was necessary to make the souls eat the fruits of merit and demerit.

Again, by the grace of *Rudra, Pracriti* is evolved from *Kalei.* From *Pracriti,* which is the material basis of the subsequent productions, spring the *Mukkanam,* the three moral properties, viz.

1°. *Sâttu Vikam*—(lit. goodness) this prompts the soul to divine wisdom; to truth and love.

2°. *Râsatham*—(lit. passion). Here lie the propensities to pride and selfishness.

3°. *Tâmatham*—(lit. darkness) cause of laziness, stupidity, drowsiness.

The position of the three moral qualities, as they exist undeveloped in *Pracriti,* is called *Avyaktam.* From this is evolved,

1°. *Sittam*—the thinking principle. From Sittam,

2°. *Pútti*—judgment. And from *Putti,*

3°. *Akangâram*—This is the individualizing principle.

This *Akangâram* is threefold, viz.

1°. *Teisatha—akangâram,* wherefrom *manam,* (mind) the understanding and the five perceptive organs are evolved.

2°. *Veikari—akangâram,* wherefrom "the five organs of

action" are evolved. These are the mouth, the feet, the hands, and the excretory organs.

3°. *Puthâthi—akangâram,* wherefrom the five rudimental elements are evolved. These are Sound, Touch, Form, Taste, Smell;—these are called *Tanmâttirei.*

From Sound is evolved ether; from Touch, air; from Form, fire; from Taste, water; from Smell, earth.

These are the essential items that make up man, and from these above enumerated Tattuvams, many other subsidiary ones are developed to make up the 96 Tattuvams. This part of the *Sâiva Siddântam* often proves difficult to many, and an incipient Hindu philosopher devotes the first months of his study to an investigation of it.

The intelligent and active state of the soul is called *Sâkkiram,* when all the 96 Tattuvams are in full vigor and play, and when the soul takes its seat in the forehead between the eyebrows. *Soppanam* is the state when a man is asleep. Here all but twenty-four of the *Tattuvams* are lulled into inactivity, and the soul descends to a seat in the neck. It experiences here only what it had seen in *Sâkkiram.* This is the phenomenon of dreams. *Sulutti* is the stage below *Soppanam.* Here the soul exists in the heart in company with only two Tattuvams—the will and the vital principle. The soul is incapable of distinguishing any thing here. From this, the soul drops down into the navel, and exists in the state called *Turiyam,* in union with the vital principle alone. Here it ceases to think. Next below is the *Turiyâthitham,* where the soul descends deprived of even the vital principle. This is Death.

The polar star of life is then, according to this Philosophy, the deliverance of the *Pasu* from the *Pâsam.* But Pasu soon loses sight of this object. The soul once set in motion in the human organism revolves on from life to death—from death

to life,—from birth to birth,—from age to age,—ever bounding away from God, and never rebounding towards him; as if it were a planet of the solar system actuated by some chance or other by the centrifugal force alone, without the co-operation of the centripetal force likewise; until its wayward course is arrested and a new direction given to it towards the centre of the orbit--even *Pathi*—"the Sun of wisdom." This takes place at last when the soul's merit and demerit (kanmam) have been cancelled, and there is no residue left to be eaten up at future births. Then there will be a cessation of births, and the soul will be ripe for liberation. The state of a man who has arrived at this phase of existence is called *Tivira Satti nipatham.* It is thus described in Sivappprakâsam:—"For such a man this world will possess no charm. He will ignore it. He will loathe his own body in the same manner in which the bearers of a worm-eaten corpse will detest it, when, on their way to the burial ground, the worms fall on them. When he finds himself in union with the warring mental faculties within his bosom, he will feel like an elephant in the paw of a lion. When he sees that he is in co-operation with the organs of sense and the organs of action, he will cry out like a frog in a snake's mouth. The way in which he will fear the influence of his family and friends, and leave them, is like that in which one, who has lain down to rest without knowing that there was a snake in his bed, will on awaking and seeing the snake, hasten away with terror; or like that in which a person whose house is on fire, leaves his goods and hastens to escape by some way or other which he sees."

The following stanza, from *Sina Gnâna sitti,* gives with great pathos and beauty (which are however lost in a translation) the manner in which God will reclaim the lost soul.

"As a king, whose son had strayed away from him and

lived in ignorance of his father amongst the *Veddahs* (wild men,) will, on discovering the son, exclaim to him 'Come to me, oh, thou darling child of mine!' and make him a participator of the happiness that he (the king) himself enjoys; so even will the Supreme God present himself before the soul when in distress, from being enmeshed in the net of the five *Veddahs*—senses, and severing the soul from Pasam, will assimilate it to himself and bless it with his holy feet."

Such is an imperfect *resumè* of the Sâiva Siddântam. A greater amplification of the subject is reserved for a future contribution, where the intimate connection that subsists between the Sâiva Siddântam and the popular form of religious worship that obtains among the Hindus of the present age, will engage our attention.

## *Terms of Address and modes of Salutation in use amongst the Singhalese. By* James Alwis, *Esq., Assistant Secretary.*

There is not perhaps a greater difficulty experienced by Europeans* in their intercourse with the Natives of this country, than that of correctly applying the forms of salutation and address known amongst them. Often have we suppressed a smile forced upon us, on hearing European authorities address a peon or other servant thus: "Pion ara pota gen'-*enta*," "Mudian*seta* andagahapan." "Aratchita kiyàpan," &c. Frequently, too, have we heard Europeans enquire with indignation, whether certain terms as applied by their Interpreters to witnesses were not insulting or offensive. Not long ago the native portion of an entire Court was much amused on hearing counsel in his address to the Court, apply the term *Walawua* to indicate the residence of a poor low caste person, his client. The difficulty of acquiring the proper use and application of terms of address, so as on the one hand not to offend, and on the other not to give too much respect, to the person addressed, seems to have been so greatly felt by Mr. Justice Stark, that he has devoted considerable attention to the study of the subject. The interesting information which he acquired, he has embodied in a paper which is found published in the Ceylon Asiatic Society's Journal for 1853. That paper, gives the reader an imperfect account of the numerous forms of salutation and address used by the Singhalese. As the topics, however, upon which he has dwelt are very interesting, the writer has in his observations followed the order of the subjects treated therein.

---

* "No people of the East are more critical as to style, or more fastidious as to terms, than the natives of Ceylon."—*Tennent's Christianity in Ceylon, p.* 265.

Mr. Justice Stark begins with what he considers "the fundamental terms of address," and gives as such *six* – tó, tamá, tamusè, tamunnehè, tamunnànsè, and tamunwahansè—with the various degrees of respect or disrespect with which each is associated in the native mind. As pronouns of the second person derived from the root ත *ta,* they are certainly distinguishable from a variety of others, which are now used as "terms of address;" but in the enumeration of the latter class Mr. Justice Stark has fallen into a few errors. Of these I may here notice seven omissions, which are pronouns of the third person, applied as terms of address in the second person, viz. උඹහේ umbahé, උඹ umba, නුඹ nuba, ඔබ oba, ඔබවහන්සේ oba-vahansé නුඹවහන්සේ nuba-vahansé and මුඹවහන්සේ muba-vahansé of which the two last only are noticed by Mr. Stark.

It is unnecessary to remark on the above omitted terms, as I have fully treated of them in the Sidath-Sangarawa; (see pp. 153—168,) but it will be observed, that Mr. Stark is far from being correct when he states that *nubawahansè* is the term now employed in lieu of *obavahansè.* If he meant, in reference to the Scriptures, of which a new version is being prepared under the auspices of the Bible Society, he was correct; but if otherwise, I need scarcely remark that *oba-vahansè* is the term in universal use amongst the Singhalese. There is, nevertheless, no objection to the change in the forthcoming version of the Bible, especially in view of the fact, that නුඹවහන්සේ like මුඹවහන්සේ (see extract from Ratanàwalia, *post*) is the term frequently found in books.

The term වහන්සේ *vahansè,* though now no longer used, except as an affix, was nevertheless anciently used by itself to convey what an Englishman would express by "your Excellency," "your Majesty," "your Highness," or "your Lordship." Thus in the Amàwatura:

වහන්සේමම්සැබවපිහිටාසිටිම්වදාරනුමැනවැයිකී "Please your Lordship, said he, I will firmly stand by the truth," &c.

The word *vahansè*, like many other terms of address, of which we may mention නුඹ* *nuba*, had not originally a plural form; although in modern usage ලා *là* is affixed to signify more than one. It was probably this peculiarity which Mr. Justice Stark failed to notice, when he remarked, at pp. 72, 73, that "the term වහන්සේ was applied to the Bhudhist priesthood in an associated or collective capacity, as in the passage—පස්වග මහනුන්වහන්සේ in the Jàtakapota"—where, the reader will observe, five *priests* are spoken of—an association of five priests to whom Bhudha delivered his first sermon.†

Speaking of වහන්සේ as an honorific term by itself, which cannot be called a *pronoun*, I may here notice a few others of the kind which convey different and various degrees of respect to the person addressed. They are අඩේ *adè* or අඩෝ *adò*, බොල *bola*, බන්ඩයි *bandai*,‡ used as "terms of address" with තෝ *tò*; as අඩෝ මෙහෙ වර 'Come here *fellow*;' බොල කාටද ඔහොම තෙ කතාකලේ 'To whom didst thou thus speak, you fellow?" ඇයි බන්ඩයි තට බද්ද ගන්ට මම කීවාදැයි 'Why fellow, did I tell thee to take the lease?' &c.

These epithets, like the pronoun තෝ, are used both in an affectionate and a contemptuous sense; sometimes by the higher towards the lower classes; and sometimes also by the lower classes towards each other. This promiscuous use, however, militates against the supposition to which Mr. Stark has adverted, that බාල is derived from බොල් 'dross,' 'rubbish.'

* See Sidath Sangarawa, p. clvii.

† See Ceylon Asiatic Society's Journal, vol. I. p. 11. Also Bengal Asiatic Society's Journal, vol. VII., p. 815.

‡ "In Nepaul," says the Rev. Spence Hardy, "the priests are called *bandaya* (whence also the Chinese bonze,) which in Sanscrit signifies a person entitled to reverence, from the word *bandana*."—Eastern Monachism, p. 11.

(p. 76.) බොල and බොලන් are derived from බල and බලන් respectively, and mean 'Behold'— whence they are used as vocatives or terms of address. බානවා, බොලන්, and මිසි which are used with හාමුනේ or උඹ, are terms of regard or attachment used frequently amongst the lower classes: the first by husbands towards their wives *et vice versa*, and by ordained priests towards their Sámanèra pupils, as බානවා පුචිඋන්නැහේ tantamount to "I say, Master Priest:" the second, amongst relations, friends, and equals speaking kindly to each other,* by old people towards their wives *et vice versa;* and the third to males alone, as by wives to their husbands, or by a superior to his inferior speaking familiarly. This last, as well as අඩා *adà,* I am inclined to believe to be of Tamil origin.

There is another word ඔහා, which I shall notice here. It is only used when no other term can be properly applied to a person either without offence or without conveying too much respect. The reader should, however, bear in mind not to confound this word with another of a similar sound ඔහැ *he* or *yonder* person, which is used in familiar intercourse amongst the Singhalese to signify a person near the person spoken to, or opposite to the person speaking. Like ඔහා, තැනා may be used in the third person, when the degree of respect due to the person spoken of, is uncertain or unknown.

I may also here notice another class of words which are terms of address, other than vocatives, and used as honorifics to particular individuals, as; "Mudianse *ràlahàmi,*"† "Mohandiram *màhatmayà,*" "Lekam *màhatmayà,*" "Arachy *ràla,*" &c.; but I prefer following the order of the learned writer before me, who treating of the honorific වහන්සේ makes the following remarks at p. 69.‡

---

* When a native wishes to convey that he is on good terms with another, he would say:—"Why, we address each other *umba* and *bolan.*"

† The Kandians use Mudianse-*mahatmaya,* but this is a *provincialism.*

‡ Here, as elsewhere, the references are to Mr. Justice Stark's Essay on *Forms of Salutation,* &c. in the Society's Journal for 1853.

"වහන්සේ (wahanse) is added as an affix to the term for God, and to all the names of God; as also in some relative expressions, as to Father in the Lord's prayer, අපගේ පියාණන්වහන්සේ *Apege piyànan wahanse.*

"But under the word දෙවියන්වහන්සේ (*Dewianwahansè.*) Clough points out the difference in its use. Innumerable instances, he says, occur of the honorific being used in the vocative, in which case it may be addressed not only to one of these beings (the gods of Swarga,) but also to a king or any person of rank; but when used in the *nominative*, it marks at once the difference between a heathen god and the Supreme being."

Mr. Clough it would seem is incorrect in supposing that දෙවියන්වහන්සේ in the nominative alone, conveys the difference between the Supreme being and a heathen god. For, the difference is not the less marked in the oblique cases (except the vocative) owing to the definite form of the expression; from which circumstance alone are christians enabled to limit its application to the one Jehovah of their faith. This distinction, though trifling, nevertheless furnishes the strongest possible argument in favor of "the continual recurrence of the honorifics in Singhalese translations of the Holy Scriptures," which, however, says Mr. Stark "soon offends Europeans, and in some cases, as Jehovah wahanse, the affix almost shocks, coming upon the ear like some discordance in an otherwise heavenly melody." If the repetition of honorifics be, as doubtless it is, offensive to the European ear accustomed to the simplicity of that language, 'whose soul is brevity;' the absence of their recurrence is not the less offensive to the Singhalese, whose notions of the beauty of a language are diametrically opposed to those expressed by the bard of Avon.

It is remarkable that the Singhalese දෙවි, like the English word 'God,' is descriptive—the former signifying 'splendour' or 'beauty' or 'purity' of the object to which it is applied, as සූර්‍ය්‍යදිව්‍යරාජ, "The divine majesty of the Sun," or as in the

Milindapprasna, simply සූර්යදෙවියා 'the divinity of the Sun;' and the latter the 'goodness' of the being who is designated by that term. Like the English word 'god,' the Singhalese දෙවි is also used by us to signify "a prince, a ruler, a magistrate, (Exod. xxii. Psal. xcvii.); or any person exalted too much in estimation, or deified and honored as the chief god."—(Phil. iii.) But there is a distinction which some writers have drawn between *devi* as applied to a god of swarga, and the same when used as a term of address to kings, &c. It is thus noticed by Mr. Justice Stark in the following note at p. 70; but without perceiving the difference in their orthography:—

"The same term දෙවියන්වහන්සේ (Dewianwahansa) is employed by Mr. Alwis in his Singhalese version of the Hitopadasa as the corresponding phrase for Please your Majesty!"—*Sidath Sangarawa.*

The reader will however observe, that both in the extract from the Túpáwansa in my Sidath-Sangarawa, p. cixxv., and in my Singhalese version of the Hitòpadèsa, pp. 205-6, දේවයන්වහන්සෙ and දේවයෙනි* are alone used to express "*His* Majesty," and not දෙවියන්වහන්සේ and දෙවියනි, which latter are applied to the various deities of Swarga.

The words පති *pati*, ඉඳු *indu*, ඉන්ද්‍ර *indra*, ඉසුර *isuru*, ඊශ්වර *ishwara*, නා *nà*, නායක *nàyaka*, each signifying 'chief,' when added to words indicating 'earth' are appellations to Kings. Thus, මිහිපති or මහීපති, භූපති, මිහිඳු, මහීන්ද්‍ර, බුවිසුරු, දෙරණිසුරු or භූමිස්වර, භූනා, දියහිමි, මහී නායක, &c. With a view to gratify the vanity of kings, who anciently laid claim to universal empire,† they were

---

* *Devi,* literally 'Goddess,' but applied to a Queen; as the masculine form *Devi* is especially the title of a King. Professor Wilson's Hindu Theatre, II., p. 316.

† Thus saith Cyrus King of Persia, the Lord God of heaven hath given *all kingdoms of the earth.*—Ezra i 2; Judith ii. 1. See also Luke ii. 1. The vain and 'flattering titles' (Job xxxii. 22.) which the Singhalese Kings received in ancient times, expressive of the most eminent qualities, were many and various.—See *Burder's Oriental Customs,* p. 189.

so designated; and also ලෝපල්, මිහිපල්, මීපා or භූපල්, in the sense of 'Nourisher of the *world.*' In the sense of being 'the chief of men,' a king is called නරසෙට, or නරනිඳු or නිරිඳු, නරවර, නරපති, නරනා, නරවරනා, &c. The designations for 'Queen' are not many. They are බිසෝ and මෙහෙසි; and are changed into අගබිසෝ and අගමෙහෙසුන්, when applied to a Queen who has been crowned, or an Empress. The words දේවයන්වහන්ස and දේවයෙනි* are changed into දෙවීන්වහන්ස Dèwìnwahansa, and දෙවීනි dèwìni—(see Sidath Sangarawa, p. 205,) when we intend to express "*Her* Majesty"; the term for *Goddess* being usually දෙව්දු formed like the ancient term for a "princess" රජ්දූ or රදූ.

In the sense in which it is applied to man, දේව is synonymous with උතුම්, from whence we have උතුමානන්වහන්සේ 'His Excellency the Governor,' "which is the title" says Mr. Stark, "given by the translators on one occasion to the Governor of Judea" at Matt. xxvii. 2. The word මහත් මයා 'He who is great' is derived from මහොත්තම *pali*, and is equivalent to උත්තම 'chief, excellent, high,'—but Mr. Stark is far from being correct when he supposes that මැති, which is derived from the Sanscrit මන්ත්‍රී, has any relation to උතුම්, or to නමැති in the line of the Royal poet:

"පවර, නමැති, මොරතොට, යති, මනාවන්."

Here නමැති, from නම *name*, and ඇති *having*, which means "named"—has no connection whatever with "meti." *Meti* Singhalese—*metes* Greek—*mantra* Sanscrit—*mati* Pali, (mens) *mentis* Latin, are the words which stand in fraternal connection with each other, having been probably derived, like *menes*, *mens*, and *mind*—from the root *men* 'to understand.' From මන්ත්‍ර the Singhalese have coined a beautiful compound නීතිධායකමන්ත්‍රනාසබාව for *Legislative Council*, and it is fully expressive of the nature and working of the

particular *Deliberative Assembly*, for which it is a designation.

Mr. Stark proceeds to an investigation of the Titles and Titular ranks amongst the Singhalese, and finds nothing of the nature of the English nobility, (p. 71.) If the learned writer here refers to the peculiarity of the relation in which the Nobility of England stands to the Commonalty, he is right. For Ceylon has no nobility, which, as in England, sends down members to mingle with the people. *Here* the distinction of caste and class is the barrier which divides the nobleman from the commoner. Whilst *there*, in England, the ranks of the nobility are largely recruited from among others, there is *here* a wide gulf between them which neither wealth, interest, nor education enables the plebeian to cross. *There* it is regarded as 'no disparagement for the daughter of a Duke, nay of a royal Duke, to espouse a distinguished commoner.'* *Here* it is quite the reverse.† Whilst therefore, there are these and other differences which distinguish the English nobility from all hereditary aristocracies in the world, there is also some similarity between the English and Singhalese nobility. As no title raised any one to the rank of 'Thane' amongst the German Saxons, except noble birth and the possession of land; so amongst the Singhalese, in an early age, none were regarded as of the nobility who were devoid of those qualifications.

A long line of ancestry descended from good blood in the highest caste (the *Goi wanse*, the cultivators or vellales‡)

* Macaulay's History of England, pp. 37, 38.

† "The marriage of a man with a woman of a superior caste to himself is prohibited, and even carnal connection between the sexes of different castes is penal, especially the connection of a higher caste woman with a low-caste man."—*Sawer's Kandian Law*, p. 26.

‡ "The Goi waugsa, Goi gama, Ratte, or Handuruwo, compriseth the *Bandara waliya;* families of the highest rank, who claim descent from Princes."—*Armour's Kandian Law*, p. 3.

alone constituted in Ceylon, the nobility of the land.* Between good blood and the privileges of the nobility, there *was* (for my remarks have reference to *the past,* when Ceylon was governed by the Singhalese Kings) an important connection. The various officers of the state, including Prime Ministers, Ministers, and Provincial chiefs, were selected from those who could trace back an honorable descent through many generations. They formed the first or chief class of society: and those who bore titles, as well as those who stood with them on an equal footing in point of birth, constituted the nobility of the land. To this body, which increased only with their families, no accessions were ever made, except as we find, from two classes of persons. One, the natural children of Kings and Princes, who were alone entitled to the appellation of *Bandàra;* and the other, those whom the Monarch had honoured by raising to, what Mr. Stark calls, the "eminent place" of *Situ,* (p. 73.) Various instances, as those of *Ghòsaka, Pawàrika, Mahadana, Sumana,* &c., may be adduced from native records, of persons created *Situ,* simply owing to their great wealth.

This may however, appear strange, when we reflect on the hinderance of caste to the social system in the East. One would be led also to believe, that something more than mere wealth was necessary to be entitled to the privileges of this distinguished title. Not so. There is perhaps not a single instance on record by which we could find that there was any other recommendation for this gift of Royalty, except the great wealth of the recipient. Of course, it is not to be supposed that this high distinction was conferred on the

* "It is the more usual course for the cultivators of the soil to be regarded as forming the noblest class of the people, next to that who held rank as hereditary princes; they are the cupatrids; they form the timocracy; and it is from them the rulers of the state are chosen; as delegates of the King, when the Government is monarchical, as temporary chiefs, when it is an aristocracy."—*Hardy on Budhism,* p. 75.

*chandàla,** the lowest of the low in point of caste; men, who by reason of their mean birth, were regarded as fit for nothing but the office of public executioners:† but such of my readers as are read in Bhudhistical scriptures, know that Mahadugià "the great beggar," whose destitute circumstances had been like those of Lazarus in the parable of our Lord, was raised to the nobility, on his acquiring a great treasure by his meritorious conduct towards Bhudhism.

There is also an instance in the *Ratanà walia,* of a poor Situ's servant acquiring great wealth by reason of his charities, and of his thereupon being created a *situ* or nobleman. The legend, after describing the nature of his charities and their result, proceeds thus:—

එරන්රන්ගෙන්නවා සෙඩුළුවෙහි රැස්කලහ. වඩුවෙන් අසූරියනක්විතාර ගොඩවිය, රජ්ජුරුවෝ නුවරවැස්සන් රැස් කරවාලා මේනුවර මෙතෙක්වස්තුව ඇත්තේ කාගේදැයි විතාලේය. සෙස්සවුන්ට මෙතෙක්වස්තු ඇතිවන්නේ රජව සිටි මුබවහන්සේට ඇත්නම්වේදැයිකීවිය. රජ්ජුරුවෝ එඅසා මෙතෙක් වස්තුඇති නැතැත්තවුන්ට සිටුතනතුරු නිසි වේදැයි බොහොසම්පත්දී සිටුසේසත්නංවා සිටුතනතුරුදී බහුධනසිටානෝයයි නමුත්දුන්හ.

That is to say:—

"They heaped up the gold in the compound; and the heap was about eighty cubits high. The King summoned the citizens and inquired of them, if there was any other in the city who owned such an immense wealth. They replied, that insignificant men could not possess so much, when His Majesty himself had it not. When the King had heard this reply,

---

* "The *Sadol* or *Chandála* is represented as one who is born in the open air; his parents not being possessed of the smallest hut, where, as he lies among the pots when his mother goes to cut firewood, he is suckled by the bitch along with her own pups."—*Hardy on Budhism,* p. 86.

† See Wilson's Hindu Theatre, vol. i. p. 159.

he said that the owner of such wealth was indeed a fit object for the nobility (Situ);* conferred on him further riches; hoisted up the white canopy of state; created him a *Situ;* and named him *Bahudhana Sitàno,* or 'The great opulent Situ.' "

If therefore, from the fact of a Situ's being a nobleman by creation, and of his being thereby entitled to the privileges† of the Singhalese Nobility, a comparison may be instituted between an English Baronet and a Singhalese Situ, I trust my observations in the Sidath Sangarawa, to which Mr. Stark refers at p. 72, were not misconceived.

It appears from the Mahawansa that the consort of Asóka, the great Monarch of India, was the daughter of a Situ. The passage to which I refer is the following: "While Prince Asóka was ruling over the Awanti country by the appointment of his own father, on a journey to Ujjeni he arrived at Chètiya; and while tarrying there having gained the affections of the lovely princess Dèwi, the daughter of a Setthi, he lived with her." *Mahawansa,* p. 76.

Although the children by this lady were admitted into the privileges to which princes were usually entitled; yet it would seem, that upon Asoka's ascending his father's throne of Pataliputtra, *Dèwi* was not crowned 'Queen consort.'

---

* සෙට්ටි or හෙට්ටි is still vulgarly used to signify 'a rich man'; as for instance, speaking of a man hoarding up riches මේ ෂ්මෙ හෙට්ටිතෙ ; කොලු මූ හෙට්ටිතාවගේද. It appears from Hindu books also, that a Situ, who is called in Sanscrit *Shrest'he,* and whom Professor Wilson designates "Chief of the Merchants"—perhaps from the circumstance of his opulence—was a nobleman who took part in the affairs of the State. In the Hindu play denominated *The Troy Cart,* in Wilson's Hindu Theatre, vol. i., p. 145, a *Shrest'he* is introduced as the Judge or "Recorder" of a Court.

† This is a proper name, and not a designation implying *Queen,* as in the following passage in the Ratnawali, the Hindu play:—

"Madam, You justly possess the title of *dévi.*"

From this circumstance* we gather, that a Situ was *equal* in rank to a Prime Minister, or even Sub-King, but *inferior* to the Royal family.

Whilst on the subject of *Monarchical* councillors, of whom a Situ was undoubtedly one, we may here glance at the state of that *Council*, the want of information regarding which Mr. Stark remarks at p. 71. But in doing so, it may perhaps not be out of place to notice a few of the Titles of address of those who composed the Executive Government of Lanka.

Although the Government of Ceylon was in the abstract a despotic Monarchy, where the will of the Sovereign passed into a law; yet it is remarkable that in ancient times, when pious and talented princes ruled over the destinies of this island, nothing of any importance was done or decreed without the advice of the අමාජ්තමණ්ඩලේ or the Council of State. Indeed the Institutes of Manu, which formed the basis of the polity of all Indian Governments, including that of Ceylon, required that the Sovereign should be assisted by his Ministers.† Thus, we read in history, that whilst different parts of the Island which constituted subordinate principalities, were placed under *Uva-ra'jas* or "Sub-Kings," the chief kingdom was presided over‡ by the *Maha-raja* or

* "The mother of the Thero Mahindu, (son of Asoka) sending her children to the King's court, continued to reside herself at the city of Chĕtiyagiri." *Introduction to the Mahawansa*, p. xlvii.

† "And all that must be done by him (the King) for the protection of his people *with the assistance of good ministers*, I will declare to you as the law directs in due order." *Manu*, chap. vii. § 36. "Let them perpetually consult with those Ministers on peace and war, on his forces, on his revenues, on the protection of his people, &c. Having ascertained the several opinions of his councillors, first *apart* and then *collectively*, let him do what is most beneficial for him in public affairs."—*ib.* §§ 56. 57.

‡ In the Raja Tarangani these seven officers are stated to be 'The Justiciary or Chancellor,' 'Treasurer,' 'Master of the Military Stores,' 'Commander in Chief,' and 'Messenger or Ambassador,' 'Royal Chaplain,' and 'the Chief Astrologer.'—See Asiatic Researches, xv. p. 21. Also in Manu, § 54. 'The King must appoint seven or eight Ministers."

Monarch, himself, who had no less than seven Councillors, or Ministers attached to his Court. In later times, however, this number was reduced to four; and yet these four, with the King at their head, formed the Cabal, Cabinet, or the Privy Council of Ceylon. Collectively, their duty was to assist the King in the Executive and Legislative functions of Government, which were vested in the King; but individually, they had separate duties assigned to them. The "Premier" was the *Pròhita* Minister; and when a Brahaman, he was the domestic Chaplain of Brahaman Kings. He was to attend on the Kings; that is, he was attached to the King's household. One had the care of the *Metropolis*, "Home Affairs," in respect of which he may perhaps be styled, "the Secretary for the Home Department," whilst another was "the Minister for Foreign affairs," and the dispenser of Justice; the latter office being analagous to that of the Lord Chancellor of England. The fourth was "the Minister of War."

The Singhalese Ministers of State, latterly, received the appellation of "*Adigars*," or "*Adikarans*," from අධි* adhi, "over, above, upon, &c., implying superiority in place;" and කරණ "the instrument in the sense of *Executive*:" but little mention of them is made in ancient books, which only refer to මැති *meti* or මන්ත්‍රි *mantri* "Councillors."

It is foreign to my purpose here, to enter into a consideration of the different duties attached to them, the perquisites to which they were entitled, and the privileges which they enjoyed. In pursuing my investigation of the names of native titles, and their significations, I shall pass on to the "Officers of the Palace,"† or the King's household.

---

* From this inseparable preposition *adhi*, we obtain *adhipati*, a term which may be properly used to signify "chairman," "president," and even "Judge" or "Governor."

† Davy's Ceylon, p. 143.

It consisted of a great many office-bearers. Dr. Davy, who was indebted for the interesting account which he has published of these officers to Millawe, the Dissàwa of Wellassa, gives thirty-six. A *Gajanàyaka Nilama* seems to have been the principal of them. As the term implies, he was "the chief over the Elephants;" and probably his superiority over the rest arose from the great estimation in which Elephants were anciently held, as one of the චතුරඞ්ගිසේනා or 'the four constituent armies of War.' His office was analogous to that of "The Master of the Horse" in England; and under him was placed a *Lèkam* or "Recorder," who obtained the designation of *Kuruwè Lèkam*, the word 'Kuruwe' signifying his connection with the "Elephant department."

The *Maha Aramudal Wannaku Nilama* was the "Lord of the Treasury," an office of the highest rank, which corresponded with that of *Bàndàgàrika*, and to which anciently even princes were appointed, as for instance, Prince Ghotabhaya.* The *Maha Gabadâ Nilama*, and the *Uda Gabadâ Nilama*, were also "Treasurers," each with distinct duties to perform. The officer answering to the "Lord Chamberlain" of the English Court, may perhaps be identified with the *Haluwadana Nilame* of the Singhalese. He brought to the King his apparel, his sword, crown, &c. He dressed and undressed the King, and waited on him for the purpose of adjusting his dress. The *Batwadana Nilama*, the officer who had the management of the royal table, and the *Diawadana Nilama*, who superintended the royal bath, were officers who approach very near to the "Lord Steward" of England. Under these were many subordinate officers, of whom *Sattambīes* were the people who poured water on the King at his

* See Attanagalawansa, and also Mahawansa.

bath, and *Pihanarälas* were Royal cooks. It is needless to enter into a minute detail of the names of the other officers. They are chiefly descriptive of their several occupations. The reader may obtain a great deal of information on the subject by a reference to Davy's History of Ceylon, where the names are given at length, with an account of the various duties which the officers performed.

The Ceylon Council of State, and our ancient Court were not unlike those of the Hindus. From the mention of various terms which occur in books, we gather that the members of whom the Singhalese Court consisted, were the same that are referred to in the Hindu Plays;* such as, *Mantris* or "Councillors," *Dutàs*† or "Messengers," *Wadakayàs* "Death's Ministers,"—of which there were two kinds, *wild animals,* such as "Elephants and Horses,' and *Wadakarus* or "executioners,"†—*Chara purusas* or "spies," *Nanayak karus* or "disguised emissaries or informers."‡

---

* "The *Court* looks like a Sea;—its *councillors*
Are deep engulphed in thought; its tossing waves
Are wrangling *Advocates;* its brood of monsters
Are those wild animals—*death's Ministers.*—
*Attornies* skim like wily snakes the surface—
*Spies* are the shell-fish cowering 'midst its weeds,
And vile *Informers,* like the hovering curlew
Hang fluttering o'er, then pounce upon their prey!
*Pr. Wilson's Hindu Plays,* i. *p.* 149.

† This word Pr. Wilson interprets to mean "attornies," or "the envoys or representatives of the parties."—*Hindu Plays,* i. p. 149. *Note.*

‡ Tradition says, that in ancient times in Ceylon, a criminal underwent the same ordeal that is described in the following passage in the Budhistical annals:—"In aforetime, the Wajjian rulers, on a person being brought and presented to them, thus charged: 'this is a malefactor, dispose of him accordingly.' They surrender him to the *Winichchiya mahamatta* or 'chief Judicial Officer.' Having examined him, if they conceive 'this man is not a culprit,' they release him. If they decide, 'this is a malefactor,' without awarding any penalty, they transfer him to the *Woharika,* 'learned in the laws.' They also having investigated the matter, discharge him, if he be innocent; but if he be guilty, there are certain officers called *Suttadhara,* 'maintainers of the *Suttan,*' to whom they transfer him. They also inquire into the matter and discharge him, if he be innocent; but if guilty, they transfer him to the *Attakulaka,* 'a Judicial institution composed of judges from all the eight tribes.' They also having observed

Referring to the difference generally between English and Singhalese officers of Government, Mr. Stark says;—

"The Government Agent is sometimes styled Dessave. But there can be no analogy among officers in systems of Government so very different as respects the distribution of official power and duty, as the English and Singhalese; and it only tends to perpetuate misapprehension to use the names indiscriminately."—p. 72.

In the case of Disàva being applied to the "Government Agent," no misapprehension results; and in my opinion, a better designation could hardly be conceived, as one with which the Singhalese are altogether familiar, and one too, with which so much respect is associated in the native mind. A *Disàva,* or more properly *Disàpati,* under the Singhalese Government, was a "*provincial* chieftain," who had principally the management of a province: similarly, the Government Agent of the Ceylon Government at the present day is the chief revenue officer of a *Province.* The analogy between the two officers is apparent, and the propriety of the native designation, is therefore unquestionable. There are also several other European titles to which native terms are peculiarly applicable; as for instance ලේකම for "Clerk;" සෙනෙවිරජ for "Lieutenant Governor;" බාඩාගාරික for "Treasurer;" සේනාපති for a "General" or "The chief of the Forces;" වලලභකුමාරයානෝ "Prince Consort;" තානාපති "Ambassador;" &c. Not so however, as respects certain other offices which are ill-expressed by any titles of address known to the Singhalese. Of this class are "Auditor General," "Post Master," "Surveyor General," "Secretary," &c.

---

the same procedure, transfer him to the *Senapati* [translated by Turnour] 'the chief Minister'; he again to the *Uparaja,* 'Sub-King'; the Uparaja to the *Raja.* The King, inquiring into the matter, if he be innocent, releases him; but if he be guilty, he causes the *Pawenipattahakan;* 'book of precedents or usages,' to be propounded. There it is written,—to him, by whom such a crime is committed, such a punishment is awarded. The Raja, having measured the culprit's offence by that standard, pronounces a suitable sentence."—*Turnour's Budhistical Annals of Ceylon.*

For the last, the Singhalese in their graver compositions, unmixed with English phraseology, adopt the title of ලිපිකාර තැන්; but it is apprehended, that it is not fully expressive of the English term. It is therefore, I believe, that in our Courts, the English word is adopted: in regard to which Mr. Stark says;

"The Secretary of the District Court subscribes himself *Secretary Swamîha*, which is derived from Swamy or Swamaya, a lord or master. This appears singularly inappropriate, his proper appellation as Clerk of Court is certainly *unnanse* :"—p. 75.

Here is some misapprehension. The title of the Secretary in question is simply Sekratàris, (the *s* being an affix added in composition for the sake of euphony, as *n* in *Dewiyan*); and he does not conclude with any honorific, but with simply වම්හ *wamha,* which means "*we are,*" for "I am." Thus it will be perceived, that the words used by the Secretary, viz. *Sekratàris wamha,* were mistaken by Mr. Stark for *Secratary swamiya.* If however, the case be as stated by the learned writer, there is no doubt but that the appellation of *lord* or *master* is "singularly inappropriate" to a Secretary, as හාමුදු රුවන් is unquestionably so to the Government Agent; who nevertheless uses this high honorific in all his correspondence with his native headmen.* A Modliar of the Gate, who was addressed in this style, returned the óla epistle to the Government Agent, and addressed him as follows on the 10th March 1839: "I did not receive it (the letter) because it was written in a manner disgraceful to me: and I do not make the least doubt that if you are acquainted with Singhalese, you would, on looking over the style or phraseology of that ola, be convinced of the impropriety of the same." See translation of the document in the Colombo Cutcherry.

* This practice is reported to have existed for "twenty-five years" prior to the date of the letter referred to in the text. See L. De Levera, Attapatto Modliar's report, March 14, 1839.

Whilst on the subject of *swami*, I may perhaps here notice another inaccuracy into which Mr. Stark has fallen, by rendering *Maha-himiyà*, 'the great proprietor'; and in supposing that the priest Seriyut was so called from his having been 'a great and distinguished *author* of his time.'* *Himiyà* here means *swamiyà*, "lord," and not "proprietor:" and *proprietor*ship and *author*ship are not convertible terms: nor have they such a relation to each other as to render one term applicable to the other in a secondary sense.

Hàmu-duruvó (see Sidath Sangarawa, p. 160,) is derived from *Himi*, which comes from "Swami"—*Sans.* It does not sustain, as stated by Mr. Stark at p. 74, the "combined sense of master and instructor;" for it is never used towards a lay instructor, although it is peculiarly the appellation of the last of the triad of Budhism, the priesthood. Yet the priest does not obtain it in his capacity of "teacher" or "instructor:" it is given to him owing to his peculiar sanctity,† as 'one of the three gems of adoration and worship.' Following the practice of the Budhists in this respect, the Singhalese Roman Catholics apply this term (Hàmuduruvo) to their priests.

The designation of a "teacher" is *guru*, from ගෞරව 'honor,' 'respect,' veneration'; and in that sense it is also applied to a parent.‡ It is used with the affix වහන්සේ and තාන්සේ, when greater honor is intended; yet it is a curious fact, that the same word ගුරු when used with the affix

---

* Probably Mr. Stark fell into this error by reading Armour's Kandian law, where *himi* (as in *lat himi*, '*domination* by right of purchase') is used in a secondary sense to mean 'right of acquiest, 'proprietorship.'

† "Of those who have no fixed habitation, the priests, the pase Budhas, and the supreme Budhas, are the chief."—*Hardy's translations from Budhist Scriptures.*

‡ "The father who performs the ceremonies on conception and the like, according to law, and who nourishes the child with his first rice, has the epithet of *guru* or venerable."—*Institutes of Manu*, II, § 142.

න්නැහේ, as ගුරුන්නැහේ conveys the idea of an instructor of a *mean* or *low extraction.*

Before entering upon an investigation of the terms applied to the Budhist priesthood, of which Mr. Stark has treated in different parts of his essay already referred to, I shall here remark that *Mudali,* from whence we derive මුදියන්සේ or *Modliar,* is of Tamil origin, and means "chief" or "principal." Amongst the Kandians *Mudiansè* is not unfrequent as an agnomen; and they, like the Tamils of India, assume it without any authority from the Crown. The Maritime Natives, however, obtain it formally by an act or warrant from the Governor. In this respect the British Government follows the example of their predecessors, the Dutch and the Portuguese.

The Modliars or Chiefs are of two classes, වාසල or 'of the Royal Palace or household,' (usually called *the Gate,* after the Portuguese who gave it the appellation of *Pòrte,* from a misapprehension of the Singhalese word *vúsala,* which also means "door" or "gate") and අතපත්තු or "Provincial Chiefs." There were originally two other classes, which are known as කුරුවේ 'the Royal Equerry,' and බස්නායක or the 'Ecclesiastical' chiefs. To these may be added a fifth class—කෝරලේ or 'the District Chiefs.'* Under each were placed different subordinate headmen, called *Mohandirams, Vidána-Aratchies, Aratchies, Kanganis* and *Vidáns.* The last is derived from the word විදාන 'commanding,' or 'ordering' and means, as Clough defines it, "the person who conveys the orders of Government to the people." Over all the headmen is placed a "Maha Modliar," the *Maha Nileme* of the Kandians, or "the greatest of the chiefs." If any person, whether titled or untitled, can trace his descent to a Modliar, he is said to be of the *Mudeli pèruwa,* the correct

* For a tolerably correct 'description of the duties of the chiefs of the Maritime Province,' see *Colombo Journal for* 1832, *p.* 262.

interpretation of which is, "of the class of Chiefs," rather than "the titled class," as rendered by Mr. Armour. (See p. 71.)

Besides the ranks and titles which the Natives obtain from the Crown, there is also a class to which particular individuals are entitled by reason of birth or position. Of these we may mention *Gamarâla,** equal to a "*County squire*" in England, but not held in the same estimation in Ceylon.† He is however of the highest caste (the Vellàlas,) and one who in point of wealth has a competency for his subsistence. *Appuhami* 'is the rank of a "gentleman," of the highest class of the vellales' who anciently enjoyed certain privileges which are now denied to them; and *Appu* that of the plebeian, equal in its application to "Mister." As honorary terms of address by which persons of different castes are distinguished, I may mention *Handuruwa,* confined to "Vellàles"; *Nydè* to "Smiths"; *Hènayâ* to "Washermen"; *Ridì* to "Washerwomen"; *Mèstri* to "Barbers"; *Mahabadde* to "Chàlias"; *Batgamaya* to "Paduas"; *Nekati* to "Tomtom-beaters"; *Wahumpuraya* to "Jaggoreros," &c. &c. Whilst the above are mere honorary designations of different castes, there are others which are used as terms of affection and endearment to persons of low-castes; as for instance, *Hèna Mámâ,* "Uncle Hena" to a Washerman; *Ridi Nendâ,* "Aunt Ridi" to a Washerwoman, *Vaduràla,* "Master Carpenter" to a Carpenter; &c. &c.

There are also certain terms of respectful designation by which persons of different trades are distinguished, as for instance *Mandadiràla,* among Fishers; for the man in charge of a part of a fishing net, called *Manda; Hannedirala* 'the owner of the fishing boat,' or 'the chief of the fishing band.'

---

* This title is rendered ගම්මුදලියා *Gammudalia,* 'the chief of the village' in a Singhalese version of the tale of the King Adahasmuka.

† Mention is made of the election of Gamaralas under the provisions of 'the Paddy Lands Irrigation Ordinance;' see Proclamation in the Government Gazette of the 24th July 1858.

Formerly Moormen composed the class of people who were generally employed as Masters of trading vessels; and they received, in the sense of *Tindal*, the appellation of *Marakkaláhàyè*, a term now applied to others who perform the same office, and also to the Head Moorman.

Whilst the above are the Ranks and Titles of address of Maritime Native Singhalese, those of Kandians appear to be different, with some exceptions, which are Kóràla, Mohottàla, Aratchila, Lékama, and Vidàne; and, says Mr. Justice Stark in reference to them:

"The above, namely, the Adigars, Dissaves, and Rattemahatmeyas, were the principal officers under the Singhalese Government; and in the convention of 1815, entered into after the conquest of Kandy by the English, for the cessation of hostilities and the settlement of this country by a formal declaration of the power and principles of the new Government, they are mentioned or alluded to as the principal chiefs of the Kandyan Provinces, and the Mohotale, Coràles, Vidahns and others, the subordinate headmen from the Provinces."—p. 72.

To the above may be added *Basnayaka* and the *Diva Nilames* (the word *Nilame*,* 'Officer' alone being sometimes used as a term of address to a titled person), which are amongst the titles of Chiefs; and Atukóràla, Aratchila, Vidàna, amongst those of petty headmen. I have already alluded to *Banda*, and the original acceptation of the term. I need only here refer to it, to shew that it is now assumed by every Kandian of the Vellala caste, in the same manner that the appellation of *Appuhami* is affixed to the name of every Maritime vellàla (and frequently of Fishers) without distinction, and contrary to the original usage, by which only a gentleman was entitled to it.

I cannot close my remarks on this part of the subject, without attracting attention to a mistake into which Mr. Stark has fallen, in common with a number of European writers, who consider the Maritime Natives to be distinct

* This, when affixed to *Maha*, is used to signify an Adigar, or the Maha Modliar.

from the Kandians, whom alone they regard as "*the Singhalese*, strictly so called." Mr. Stark remarks:—

"The Kandian or hill country is distinguished from the lower or Maritime districts, by the same name, Singhalese; and the town of Kandy is *Maha Nuwera*, the *Migalo-polis* or great city, the Metropolis. These names are easily accounted for, but they are recorded as given."—p. 76.

Now, the Kandians, like all highlanders, are certainly distinguishable from the Maritime Natives. From the salubrious air which they inhale amidst their upland hills, the Kandians are braver and more hardy than the people of other provinces. The independence which they enjoyed until comparatively a short time ago, has tended also to elevate their general bearing over that of the people of the Southern and Western Provinces. They have preserved too, their religion and language without suffering much from the various colonial influences to which the low-landers have been subjected for three and a half centuries. The latter, by the change of their religion, occupations, and habits, may have slightly lost the distinct peculiarities which originally characterized the entire Singhalese nation; yet the differences in these respects no more render necessary a distinction in their nationality, than do the accidents of birth-place, or other circumstances, which enable us to distinguish an Englishman of Northumberland from another of Middlesex or Yorkshire; or a native of Galle from one born in Colombo. The difference, however, which has been drawn by Mr. Justice Stark, has arisen from a misapprehension of a single circumstance. It is this. When a part of Ceylon fell into the hands of the Portuguese, and the Singhalese Court was removed from Cotta to Kandy, that part of the *Singhala'dwipa* which was retained by the Singhalese, was called සිංහලේ *Singhalè* (the appellation by which the Kandian Provinces are known to this day,) as contradistinguished from the territory of the Portuguese. The distinction therefore, was one of *territory*, not of *nationality*. It was employed to determine the juris-

diction of the Singhalese Government from the possessions of the Portuguese. As the Kandian Provinces alone (which were retained by the Singhalese) became thus universally known as *Singhalè*, a misapprehension of its cause and origin led Europeans to distinguish the *Maritime Singhalese* from their Kandian neighbours, both of whom are descended from the same stock, speak the same language, are subject to the same habits, and are possessed of nearly the same feelings. Hence the distinction to which reference is made.

There is however one distinction, in respect to their names, which I may notice here The low country Singhalese have more names than their Kandian countrymen. Whilst the *gènama* or "family name," the *bat-kavana-nama*, "the household term of endearment"—usually given on the occasion of giving food to a child for the first time, which is celebrated by a festival,—and the *patabendi nama*, or the name which is assumed on obtaining office, are the same in both countries: yet the names which distinguish the *Kandian* from the *Maritime* Singhalese are the *Christian* and *Sur* names* of the latter. The "Sur" names are those which they have borrowed from the Portuguese, such as D'Saram, D'Alwis, Silva, Perera, Dias, D'Saw, &c. &c., and the example having been first set by the highest families of the land, the lower classes have considered it a privilege to be allowed to assume the like names. As to the *Christian* names, they are generally assumed by all classes, both Budhists and Christians, upon the ceremony of Baptism, of which Sir James Emerson Tennent thus writes, in his work on "Christianity in Ceylon."

"It had been declared *honorable* by the Portuguese to undergo such a ceremony; it had been rendered *profitable* by the *Dutch*, and after 300 years' familiarity with the process, the natives were unable to divest

* In accordance with this practice amongst the Singhalese, the Tamils of Battacotta, have assumed, upon Baptism, such names as Carpenter Rowe, Morgan, Covington, &c. &c.

themselves of the belief that submission to the ceremony was enjoined by orders from the Civil Government."—p. 88.

So they believed at first. But Baptism soon became an indispensable rite in regard to their civil rights. One of the consequences of this ceremony was, that the name of the party baptized was registered in the Thombo: and the registration was of the most paramount importance to the litigious Singhalese. In all matters regarding their inheritance, in all their contentions on the ground of illegitimacy, and on various other questions that frequently come before the Courts, *registration,* and registration *alone,* is the best evidence of what they seek to establish, or disprove. From the fearful amount of perjury that is to be found in the Courts, they fear that without this documentary proof they will fail to establish their rights: and it is therefore (to use the language of Sir Emerson Tennent in the subsequent part of the passage that I have just above quoted) that, "when a parent upbraids his child in anger, he sometimes threatens to disinherit him, by saying, he will *blot out his baptism from the Thombo.*" So scrupulous however, are they in respect of this registration, that actions have often been brought to compel the registration of particular patronymics, and to cancel others to which parties were not entitled.

Thus it will be perceived, that the Singhalese resort to *baptism,* not as a religious duty, nor as a ceremony which conferred, as supposed by Sir Emerson Tennent, "some civil *distinction;*"* but simply as an operation which alone secured the registration, which they prized so very high.

This leads me to notice a misapprehension under which Sir Emerson labours, when he thinks that "to the present day the Singhalese term for the ceremony (Kula-waddanawa) bears the literal interpretation of 'admission to rank.'" Not so. Owing to a notion amongst the maritime Singhalese, that

* See p. 88.

if they adopt in their families a stranger or an illegitimate child, after baptizing him "in their own name"—which follows a registration of the baptism in the Thombo—he would, in the event of their death, be entitled to inherit the property of "the adoptive parent's estate;"* *Kula-waddanawa* was originally used amongst the Singhalese: but its application at present to the baptism of legitimate children, as well as natural offspring, and children by adoption, is to be regarded merely as a species of *catachresis* in the language. *Kula-waddanawa* again, is not "admission into *rank*;" but "admission into *family*"—a recognition of one's *civil rights*. Thus, the *Kula dèvatáva* in the Hindu plays† is the *household* deity, the "object of *hereditary* and *family* worship," the *domestic* god of the Brahamans. In the *Sela-lihinisandèsa,* the poet directs his winged messenger "cheerfully to remember his *household* god."

"නාදේසිතින්නමකුලදෙවියසිහිකොට"

I presume the notion regarding the "distinction," which it is thought *baptism* conferred on the native, is without foundation; and Sir Emerson is equally misinformed, when he states, that *Tò gentìguâ,* which he interprets to mean "unbaptized wretch," is applied by *budhist* to *budhist* as a "term of reproach." *Gentìgu* is a Portuguese word used in the sense of "gentile," or "pagan," and is only applied by *Christians* to their Budhist brethren by way of *reproach;* as many of the slander cases before the District Court of Colombo, amply testify. It has no connection whatever with baptism; and I may safely affirm, that no native uses it to a co-religionist, much less by a Budhist to one of the same creed.

* This is a notion still entertained by many Native Singhalese, although the Dutch law, to which they are now subject, had completely upset the right which the child of adoption acquired by the Singhalese law.—See *Sawer's Notes on Kandyan Law, p.* 25.

† Vol. I. p. 21.

I shall now proceed to an investigation of *religious* titles or "terms of address" to *Budhist priests.* On this subject, the following passage occurs in the essay already so frequently referred to:

"A generic name for a Budhist priest is said by Bridgnell to be ගණින්නාන්සේ (ganninnanse) probably from some root signifying learning or wisdom, whence we have *Ganesa* the Hindu god of wisdom, *ganeya* a poetical measure, and *ganetiya* the science of Arithmetic. But Clough derives the word differently, and thinks it is an inferior term applicable to the lowest order of priests."—p. 75.

In my opinion, both Bridgnell and Clough have failed to give the correct application of the word *Ganninnânsè.* In the first place, it is not a generic term for a 'Budhist priest'; although people of different creeds (other than Budhists) vulgarly employ it, as well as the simple *Unnânsè,* to signify a *priest.* Sometimes also '*gana*' is used without the *nansè* in a contemptuous sense, as අරගනයාගේහැටි! tantamount to 'look at that ganayâ!' In the next place, it is not "an inferior term applicable to the lowest order of priests." It is properly the designation of the *principal* or the chief of a semi-association; "the නාන්සේ lord of a ගණ class;"* or, in the language of *Milindu,* in the Milindapprasna; the "*head of a sect* having fraternities of his own." Hence it is clear, that the word is not derived "from some root signifying *learning* or *wisdom.*" Nor is it from any such imaginary source that we get *Ganisà* the Hindu God of wisdom, *ganaya* a poetical measure, and *ganitaya* the science of Arithmetic. *Ganisa* and *ganaya,* like *ganninnansè,* are both derived from the same root *gana* or 'class':—the *ya* in *ganaya*

* A *gana,* according to the ceremonial doctrines of Budhism, is a class or semi-association of not less than two nor more than four priests; and *Sanga* is an association of any number of priests above *four.* Thus, the following passage in the Milindapprasna, referring to the six *Arahatwas* or Tirthakas, ඡ පූදෙනාවහන්සේ සඟප්‍රධානයෝය ගණප්‍රධානයෝය may be interpreted: "Their Lordships, the six aforenamed, are hierarchs over [Sanga] *associations,* and [gana] *semi-associations.*"

being merely an affix for the sake of euphony, and *isa* in "ganisa" being an abbreviation of the word *Iswara*, or 'chief,' whence as 'the chief of a class' it is applied to the Hindu God of wisdom. But, *ganitaya* is derived from gana 'to count.'

The principal terms, however, for a Budhist Priest are four; 1, *Sráwaka* from *Srì* 'to hear.' 2, *Sramana* (Sans.) *Samana* (Pali) *Mahana* (Singhalese), signifying the performance of ascetism; whence it is probable that the epithet *Samanean*, as applied in the religious system of Tartary, is derived. Sir Emerson Tennent, in his work on "Christianity," has the following note in reference to the use made of this term by other nations.

"It is remarkable that this name (Sàmenèro) which to the present day is preserved as the designation of the Budhist priesthood in Siam and Ceylon, should be the same by which the Samaneans or Budhists of Bahar are described by Magasthenes, who, B. C. 300, was an ambassador from Seleucus to their King; and whose lost work on the state of India at that period is quoted by Strabo and Pliny. The same designation for the priesthood, *Samana*, is applied equally by Clemens Alexandrinus in the second century, and by Porphyry in the fourth."—p. 216.

Referring to the same use of this word, the Rev. Mr. Hardy extracts the following passage from "Relation des Royaumes Bouddhiques," p. 60, quoted from San tsang fà sou, liv. xxii. p. 9.

"When the four rivers fall into the sea they no longer retain the name of river: when men of the four castes become Samanians, they receive the common name of sons of Sakya (synonymous with bhikchou.) *Eastern Monachism*, p. 11.

The word *Samana* becomes *Hamana* by the well-known transformation of *s* and *h*; and the last, by a process of metatheses, assumes the form of *Mahana*.* See Sidath-Sangarawa,

---

* The proper designations of a priest are *pabbaja*, one separated from secular life, and *Bikku*, a mendicant. The common Singhalese term is *Mahana*, which is represented as being only a different pronunciation of *Samana*; one devoted to religious meditations for the purifying of his own heart.—*The Rev. D. J. Gogerly's Essays in Reibero's Ceylon*, p. 272.

p. 7. From *Mahana* we obtain the word *Mahana-unanse* or *Mahan'-unanse,* which means "Reverend ascetic"; but not "*the great one,*" as incorrectly interpreted by Mr. Hardy, probably by confounding it with *Maha-unanse.*—'the great one,'—which is *not* the "collective name" of the priests, but a designation by which the chief of a Monastery is distinguished from amongst several who happen to form an association, or to be the subject of conversation or writing.

From the Pali word *Samana* and *èra,* which in composition becomes *nèra,* we obtain Sàmanèra;* and it means a "*young ascetic,*" "a novice" or "pupil of a priest." The words which bear the same meaning, and are applied to Samanèros or priests who have not received the Upasampada ordination, are *Yatiput* and *Herana.* Many honorifics, which are used towards the Upasampadà priests are inapplicable to the Sàmanèros. Thus we find in the Singhalese version of the Milindapprasna, and in one and the same sentence, that a *Sàmanèra* is spoken of as "Sàmenèrayan *wahandè*" සාමණේරයන්වහන්දෑ;† and a *thera* as, "bikshùn *wahanse*" භික්ෂුන්වහන්සේ: and where a priest applied "Saminda" to his own teacher, a venerable *Sàmanèro* of upwards of 60 years of age, the propriety of the designation was questioned in the following lines published in the *Yatalaba-Sangara,* p. 37.

හෙරණදමුරුවන්කොය්ලෙස්සමින්දුඋනාදේ
වරණකරකියන්යුත්ලෝසිරිත්බස්නොමැත්දේ

3. *Sthavira* (Sans.) *Thèra* (Pali) or *Tera* (Singhalese,) means an "Elder." It is synonymous with *yati;* and both are equally applied to a priest after he has been an *Upasampadà* priest of 10 years standing. Before, however, he completes his tenth year after ordination, his career is divided into two periods—the first from the date of ordination till his

* See Clough's Balawatara, p. 89.

† Of the Sàmaneras the ordained elder priests sometimes use the pronouns උන්දෑ and මුන්දෑ.

fifth year, and the second from that time until he becomes a *thèra* or "elder." During each of the above periods he obtains the designation of *Nawaka* and *Majjima* respectively. 4. *Bikshu* (San.) *Bikkhu* (Pali) *Bik* (Singhalese) is derived from *Bikshu* 'to beg,' literally 'a beggar' or 'mendicant.'

In a collective sense *Sanga* is used, and means the whole order collectively—'the priesthood,' 'an assembly or an association of Budhist priests.' The honorific වහන්සේ is usually applied to *Sangayà*, *bikshu*, and *thera*; and නාන්සේ to *gana*.

There is a peculiar etiquette in the use of terms of address amongst the priesthood; which seems to have been regulated by Budha himself, in the sixth Bhanawàra of the *Parinibbana Suttan*, where the following passage occurs:—

"යථාඛෝපනානන්දඒතරහිභික්ඛූ අඤ්ඤමඤ්ඤං ආවුසෝවා දේනසමුදාචරන්තිනඛොමමච්චයෙනඒවංසමුදාචරිතබ්බංථේ රතරේණආනන්දභික්ඛු නානවකතරෝභික්ඛු නාමේනා වාගොත්තේනවාආවුසෝවාදේනවාසමුදාචරිතබ්බෝනවක තරේනභික්ඛු නාථේරතරෝභික්ඛු භන්තෙතිවාආයස් මාතිවාසමුදාචරිතබ්බෝ"—

'Ananda, although priests are now in the habit of (indiscriminately) addressing each other with the term *àwusò*; yet after my death this practice should not be continued. Ananda by a senior *thèra*, a junior (priest) should be addressed either by his *personal* name, or by his *family* designation, or by the appellation of *àwusò*; and by a junior (priest) a senior *thèra* should be addressed *bhante* 'Lord,' or '*Ayasma*' 'Longevous.'

'Awuso' is ඇවැත්නි *Evetni* in Singhalese; *bhante* is වහන්සේ *vahanse*; and *Ayasma*, which means 'Thou who art longevous' and approximates in sense to the English epithet 'Venerable,' is ආයුබොවන් *Ayubòvan*. This last is a term of address very common amongst the Singhalese, and is frequently employed in addressing persons of rank and age, both

priests and laymen. ආයුබොවන් is also the form of salutation amongst us, and in the sense of wishing one 'Good morning' in English, the Singhalese greet one another—*Ayùbòwan* 'Long life.' This is a salutation which has no distinction as to rank, caste, or class. It is used by all indiscriminately, by the highest to the lowest, *et vice versa.*

It is not a little curious to observe that *àwusò* (which is simply a vocative)* has the signification of the English term, 'I say:' this is however an accidental similarity; and the words are no more derived from the same source, than *gargaràyana rela,* ගර්ගරායනරැල (in Milindapprasne) from "gurgling rill;" or *coka còke* කොකාකෝක් from *cocra còax.* Speaking of the resemblance in the sounds of words in different languages, I may here observe that although the word *ebittaya* "the attendant of the priest," bears a great resemblance to the *ebitikos* of the Greeks, "a bit boy" or a 'stripling,' as stated by Mr. Stark at p. 76; yet that the word itself is derived from අභි 'before,' 'front,' or 'opposite,' and යුක්ත 'who or which is;' whence it means "a person who is ever before you;" a "page." I may also here intimate my belief that the Hebrew term *Tirshatha,* applied as a title to the Governor of Judea under the Persians, and mentioned in Ezra; ii. 63. Neh vii. 65; viii. 9; has no connection with තීර්ථක *Tìrthaka,* as hinted by Mr. Stark. (See Note p. 75.) The former is believed by some to have been derived from the Persian word signifying *harsh,* and by others from a different word meaning 'fear'; and thence applied to a *Ruler* or *Governor* as the "dreaded one." But the latter term '*Tìrthaka*' is from තීර්ථ 'to ferry over;' thence applied to a "Religious teacher,"† from his being a person who helps mankind to ford the troublous waters of life. In Ceylon Bhudhistical works, it is used to

* See Clough's Balawatàra, p. 70.

† Bombay Asiatic Society's Journal for July 1857, p. 401. *et seq.*

signify "a teacher of a sect different from Budhism," or a "sectarian," an "unbeliever;" or as Mr. Turnour has rendered it in his Bhudhistical Annals, "one of the antagonist creed." To return however to the subject. In accordance with the injunction of Budha contained in the passage which I have extracted from the *Buddhawansa*, the Sàmanèros, address the Upasampadà priests හාමුදුරුවෝ, තෙරුන්නාන්සේ, තෙරුන්වහන්සේ, or ආයුබොවන්; whilst the latter use towards the former තැනා, බානවා, ඳුම්උන්නැහේ, තමුසේ, උන්දෑ. As amongst the priests themselves of each class, there are different appellations. For, (to use the language of Turnour) "as in the order of ordination one Bikkhu must be senior to another, an appellation implying equality applied by a junior to a senior Upasampada is disrestpectful and irreverent."*

I shall here notice a peculiarity arising from sectarian animosity, viz., that the priests of the Siam and Amarapura sects do not, when they meet, salute each other. Amongst other peculiarities which distinguish the one from the other, I may also here mention the fact, that the Amarapuras differ from the Siamese by having both their shoulders covered with a roll of robe. I will not express an opinion as to the correctness or incorrectness of the innovation: but judging from the conduct of the fathers of the Budhist faith, the adjustment of the robe, so as to leave one shoulder bare (as is the wont of the Siamese sect) seems to be proper, at least in appearing in an assembly. The reader will find frequent mention of this in Bhudhistical writers. I shall content myself with three extracts from Turnour's Pali Bhudhistical Annals, in the sixth volume of the Bengal Asiatic Society's Journal.

"The thero Anando who had attained the arathood, also repaired to the meeting. 'How did he go'? Saying to him self with the greatest delight, adjusting his robes, *so as to leave*

* Bengal Asiatic Society's Journal, vol. vii. p. 1007.

*one shoulder bare*," p. 517. "Having thus imposed on himself that office, the venerable Upali rising, adjusting his robe *so as to leave one shoulder bare*, and taking up the ivory-wrought fan, and bowing down to the senior priests, took his seat on the (pulpit) *Dhammásanan*," p. 519. "The venerable Anando then rising from his seat, and adjusting his robes, *so as to leave one shoulder bare*, and bowing down to the senior Bhikkhu, took his place in the Dhammasanan, holding up the ivory-wrought fan." p. 521.

This is an ascetic rite, probably borrowed from the *Institutes of Manu*, where it is laid down, cap. II., § 193. "Let him always keep *his right arm uncovered*,—be always decently apparalled, and properly composed," &c. Again in cap. IV., § 58, "In a temple of consecrated fire, in the pasture of kine, in the presence of Brahamans, in reciting the Vèda, and in eating his food, *let him hold out his right arm uncovered*."

Reference is made by Mr. Justice Stark to *Upali*, one of the priests named in the above extract, and a doubt is expressed as to whether he was identical with *Upali Mahu Situ*, the nobleman whose conversation with Budha is noticed in a passage from the *Amawatura*, extracted into my Sidath Sangarawa, p. clvii. They were however different persons. The *priest* Upali was a barber; but the *nobleman* of the same name was the follower of a *Tirthaka*, an heretic. A brief history of the former is given by the Rev. S. Hardy in his work on Budhism, p.p. 231-2; and the same writer gives the history of Upali, the *laic* or "householder." *ib.* p. 266.

Having noticed the want of identity between the two Upalis, I shall proceed to consider what Mr. Stark calls "the distinguishing terms characteristic of the *priest* and layman." (p. 76.) In one sense, the words *gihi* and *bikhu* have the same distinction which *laicus* and *clerus* have; but, generally, they

serve to indicate no other difference save that between the *householder* and the *houseless wanderer,* which latter a priest undoubtedly is, by the rigid vows of his order. From the Sanscrit word ගෘහ (*graha*) we obtain the term *grahapati,* 'lord of the house,' 'landlord;' beautifully expressive of the English word *host,* as contra-distinguished from *amutta* 'a guest' or 'stranger.'

As applied to the laic only, there are to be found several honorific terms of address in books; as for instance සගයෙනි, "O youths," පින්වත්නි, "O prosperous," &c. So also as applied generally to the ascetic, we have නිදුකානාවහන්සේ, a word adopted from the Pali, and which frequently occurs in the Milindapprasne in the sense of 'Hail! Your Worship!'

The names assumed by the Budhist priests are different from those taken by the laity; e. g., Sangah Rakkhita; Dhamma Ratana; Samanatissa; Dhammànanda; Atthadassa; Sumanasàra; Sumana; Gunaratana; Jìnànanda; Dhammà-nanda; Dharmaràma; Dhammatilaka; Siri-Sumana; Panha-Sàra; Dhammakkanda; Sòbhita; Suguna; Ratanapàla; &c., &c. Some of them are coined, whilst others, like Siddhatta and Ràhula, are those which are found in books. The following passage extracted from the Bhudhawansa, shews the origin of the word *Ràhula,* which does not signify "eclipsed," as hinted by Mr. Starke at p. 73.

තස්මිංසමයේ රාහුලමාතා පූත්තං විජාතාතිසුත්වා සුඬෝදන
මහාරාජාපුත්තස්සතුට්ඨිං පවේදථාතිසාසනං පේසේසි බෝධි
සත්තෝතංසුත්වාරාහුලෝජාතො බන්ධනංජාතන්ති ආහරාජා
කිංමේපුත්තෝ අවචාතිපුච්ඡිත්වාතං වචනංසුත්වා ඉතෝපට්
ඨාය..මේනත්තාරාහුල කුමාරෝයෙවහෝතූතිආහ.

That is:—

"At this time, Suddhòdana heard that (Yasòdarà) the mother of Ràhula, had given birth to a son; and, desirous of gladdening his son, sent him a message (to announce the event.) The Bhòdisat, on receiving the announcement, ex-

claimed, 'A *Rahula* is born!' *A tie has been created!* When the king, having inquired what his son had said, was informed of (*tan wachanan*) that word (i. e. *Ràhula*, the chief word of his son's exclamation), Suddhòdana said 'Let then *Ràhula* (prince) itself be the name of my grandson from henceforth."

The names which are used by the *laic* as terms of address towards the elders of the Budhist church, are generally those given to their native countries; as for instance Mìripennè, Karangoda, Bentota, Ambegahapitia, &c., &c. The titles which were anciently given by the Crown to a chief hierarch of the Budhist church was *Sanga Ràja*. (See an instance of this in the extracts in my Sidath-Sangarawa, p. ccxxvii.) But, when the Singhalese Government had ceased to exist, the dignitaries of their church were designated *Nàyaka* and *Anu-náyaka* ("the chief" and the "next chief") with the honorific affix of *Terun'anse* or *Unanse*.

Treating of the word උන්නාන්සේ, says Mr. Stark :—

> The word is not used however to any other than such priests (a thèra). It is not given to *Kapuwà* or god's priest; nor to the *Yakadura*, or devil's priest; nor to the *Balikàrayà*, or planat priest."—p. 74.

He is quite right. No respect whatever was originally shewn to the priests of a worship which had not the sanction of Budhism. Thus a "devil's priest" was called *Yakka-dàsa* (Pali), or *Yakdessà* (Singhalese), "the devil's slave." But, as corruptions crept into the religious worship of the Island, from the invasions of Ceylon by the Malabars,* and Yakka worship was gradually introduced by them, 'the *slave* of the devil' became *Yakadurà*, or 'the *teacher* of demonology': and the simple *Kapuwá*† 'god's priest,' was designated 'Kapu*rala*.'

* See Mr. Silva's Essay in Reibero's Ceylon, p. 274, *et seq.*

† This word is derived from *Kepa* කැප 'to set apart,' 'dedicate'—it being usual, when a vow is made to the gods, that as an earnest of one's obligation, or the assurance of the fulfilment of one's vows, to plant a pillar, as it were the foundation stone of the building to be thereafter erected for the ceremony. Whence this pillar is called කප් *kap*, and the priest who plants it is thence designated කපුවා '*Kapuwá*.'

Even here the reader will observe that the honorifics used are such as do not convey much respect towards the professors of the new faith.

The aversion which the Singhalese anciently felt to demonology, and, consequently the contempt with which they regarded the professors of that faith, viz. the *Andi* Fakiers, who were at one time the pest of Ceylon, may be easily gathered from the *Andi màla;* a book written with the professed object of alienating the affections of the misguided Natives, who had evinced an attachment to a Pretender to the Singhalese throne; and of denouncing the faith which he professed. The writer in reference to the Pretender says that 'it would be far profitable to give to a dog that which is in vain spent for *Wilbáwa,* the devil's slave' &c. :—

විල්බාවේයක්දෙස්සාහට වැඩනැතුවම දෙනාදේ
බල්ලෙක්හට දුන්නොත් සොඳසිතෑස් දඩයන්කරදේ

And after an immense deal of reproachful language in respect of the religion which his hero professed, the writer thus expresses himself as to the different merits of the worship of Budhas, gods, men, and devils.

බුදුන්වැඳමෝක්පුර පැතුවෝ නිරාදුකකටපත්නොකෙනෙක්නැ ත
න්තින්දෙවියන් වැඳපිදුවෝ දිනුවාමිස පැරදුනේ නැ ත
රජුන්සේවයකර මෙනර ලොව දිනුවොත් ඇ තපැරදුණොත් ඇ ත
යකුන්හටපිදුකෙනෙක්දෙලොවම පැරදුනාමිසදිනුවේනැ ත

"Those who worshipped Budha and reached the city of Niwan, have *never* fallen into Hell: those who worshipped and offered unto Gods have never failed their reward: those who served man (Kings of this world) have had their reward both good and evil: but those who offered unto devils, were ever lost both in this as in the next world, and was never benefitted."—

Another class of terms of address to which reference is made are household words; and Mr. Stark thinks that they are "generally of a common character, and not words of affection or endearment." p. 75.

Not so. The terms of endearment amongst the Singhalese are nearly as many as those of honor and rank. Take for instance the ephithets for *woman,* neglected and degraded woman. She is *sonduru* or *vami,* expressive of what Milton describes her to be, the

———"fairest of creation * * and best."

She is *vati* "wealth," or 'life of man,' tantamount to the expression "the better half," as when Milton describes her to be,

" Part of my soul, I seek thee, and thee claim
My other half,"———

Other terms, like those which Mrs. Malaprop thinks, 'profane expressions of endearment,' are not wanting amongst us; but with them, we have no concern here. I may therefore pass on to different other terms by which woman is designated. She is *pamá* 'the tempter;' *sanda* 'Moon-like beauty;' *piya* or *kama* 'the darling' *vilasi* or *katha* 'the very *delight* of man.' I am free to admit that the Singhalese, like other nations, have not failed to notice the fraility, the weakness, and the timidity of woman; and to coin words expressive of such qualities. The word *biri,* (භීරු given by Mr. Stark, at p. 76, being the classic form of the same word,) indicates the *timidity* of her mind, as තුනුඅඟ *tunu-anga* expresses the *weakness* of her frame; and ලිය *liya,* 'winding shrub,' signifies her dependence on man, like

———" the woodbine, the sweet honey suckle,
Gently entwist, the female ivy so,
Enrings the barky fingers of the elm."

If in *this respect* the Singhalese may be accused of want of gallantry, it is, I apprehend, a charge to which they subject themselves in common with the best and most enlightened nations of the West. The reader will find a precedent in the line where Ovid makes Hero write to Leander, thus:—

*Ut corpus teneris ita mens infirma puellis.*

In a country where the Natives closely imitate the manners of the dominant race, one may naturally be inclined

to expect that English epithets of endearment are generally used by the Singhalese. In my varied intercourse with my countrymen, I have, however, not known more than one instance of the kind, and that confined to a dashing young fellow who had been the domestic servant in an English family. It is possible, nevertheless, that there are other instances of Natives using English household terms of endearment; but I may venture to assert that the practice is not general, and that it is not likely to be so hereafter. In the instance* referred to by me above, the words used were "My dear." A person who proved the fact gave it as "*Dio*"; and between the ignorance of the witness, and the dulness of the Interpreter, a new word appeared; and the Judge took it down "Bui"—a fact which moreover shows that the Natives are not familiar with such terms.

I have considered the *titles of address* given to males. It may be convenient here to enter into an investigation of those usually applied to the female sex.

A Lady of distinction, such as the wife of a Modliar, is වලව්වේහාමුදුරුවෝ or වලව්වේ ඇමිණිතැන්: she is sometimes addressed by equals වලව්වේමහත්මයා, ලමාඑතනි; or ලමාතනි. A lady who is a grade inferior to the last receives the title of හාමිනේ. It is however the usual address of the wife of a Mohandiram or Appohamy, and of the unmarried daughter of a Modliar. ලමාහමි is the title of an Arachy's wife, whilst මහගේ is that of the wife of Kangany, Vidhan or Gamaràla; හාමි is the honorary designation of a respectable Vellàla female of the lower classes. It is sometimes assumed by males of the same standing in society as the females last mentioned, especially in the Southern Province;

* No. 35,800. District Court of Colombo, South, before Judge Langslow, for compelling Defendant to marry Plaintiff—a witness stated: "the defendant addressed the plaintiff 'Ado Hàmi,' she him "Pulle;" and when she called him so, he called her "bui" *(Dear)*. I believe them to be very *endearing* terms."—See Judge Langslow's notes of the evidence.

but it may be observed that it is a term more appropriate to a female.

In the Kandian Provinces කුමාරිහාමි is the highest title of a lady of distinction, second only to a කුමාරි or Royal Princess. මහත්මයෝ, "Her Highness" is the feminine form of මහත්මයා, which Mr. Stark says at p. 70, on the authority of Clough, is equivalent to "Mr." The former may therefore be regarded as equal to Mrs., and is only applied to a gentlewoman; whilst එතනා is decidedly the designation of the plebeian female. මැණිකේ which means, literally, a "gem," is the term for "gentle *lass*," although it is frequently used towards those who have attained a good old age. This last term which had once fallen into disuse, is again current throughout the low country, and it is applied in the same manner in which it was originally done, by being applied to the ladies amongst the Singhalese.

The above are the honorary titles of the *vellàles,* all other castes being entitled to different other designations, such as නාච්චිරේ and නාච්චි, the wife and daughter respectively of a 'smith'; රිදී a 'washer woman,' &c. &c.

My limits forbid my entering more deeply into the subject than I have done. I shall therefore proceed to notice a few other matters of interest, to which Mr. Justice Stark alludes in the essay to which I have so frequently referred. Of these, the terms by which Kandians designate their children as to size (p. 76.) demand attention here. Mr. Stark notices only two, *loku* and *tikiri,* whilst there are no less than five words which convey the respective ages of children or persons in a family. Thus, *loku* is the 'eldest' of a family; *madduma* or 'middle' is the next in gradation or age; *kudá* indicates next 'small;' *tikiri* 'smaller' still; and *punchi* the 'smallest' of all. In the maritime country, however, *tikiri* is not used; and ඇබිතතන් 'ebittan,' a term peculiar to the low country, is a 'bit-boy,' as applied to *baba* or 'baby,' smaller than *puncha* or 'little one.'

The Pali or Tamil word *aiya,* probably derived from the Sanscrit *arya** "the respectable," is found in the Singhalese; and is used by us to signify 'an elder brother'; and *akka,* which is a Sanscrit word for "mother," is adopted in the Singhalese to designate 'an elder sister.' The use of these terms denote the great respect with which the elder members of a family are treated amongst the Singhalese; and it is well known that elder brothers and sisters amongst us are never mentioned or called by their proper names. When the terms *aiya* and *akka,* assume a more endearing form, they are expressed 'aiy*andi*' and 'akk*andi*;' and the same termination (*andi*) is employed when speaking of a mother respectfully, as *ammandi.* The termination, in a similar application of the words *appa,* 'father,' and (bàla-appa or) *báppa* 'uncle' is *tchi,* as *appotchi, báppotchi.*

As the above are nominal terms of address peculiar in their use and application, so there are also nominal terminations and verbal affixes in the Singhalese, to which I shall allude here. Of nominal terminations, I may mention a peculiarity which is not generally understood. It is in reference to the use of names without honorific affixes. When persons address each other without honorifics, they change the terminations of the name from one vowel sound to another. They do so with a view of conveying respect. Thus for instance podd*a*, 'little one' is changed into podd*é*; Justin*a* to Justin*è*; Cornis to Cornisè, &c. Though the latter is the vocative form of the noun, yet that form is adopted in the other cases also, with a view to honor the person spoken of. Where, however, no respect is intended, the proper termination of the name is alone retained.

There are several verbal affixes. Of them, සේක *Sèka* denotes the highest respect, as in the passage දසදෙනාවහන්සේසඟප්‍රධානසේක ගනප්‍රධානසේක. So does මැනව

* See Pr. Wilson's Hindu Drama, vol. I., p. 113, note.

*menawa*, as in the Lord's Prayer, 'Give us this day our daily bread.' අපේදවස්පතා බෝජන අපටඅදදුනමැනව.

Speaking of verbal affixes in the imperative mood, to convey various degrees of respect to the person addressed, I shall here exhibit a few of the changes which one solitary word undergoes, when applied to different persons. Take for instance ඒන් 'to come:'

| | | | |
|---|---|---|---|
| 1 | දේවයන්වහන්ස | to kings | අවමැනව. |
| 2 | හාමුදුරුවෝ | to noblemen | යහපත්වෙන්ට. |
| 3 | හාමුදුරුවෝ | to Priesthood | වඩින්ට or වැඩම කරන්ට. |
| 4 | උන්නැහේ | to a Sàmanèra by a Thèra | එනවා. |
| 5 | තමුන්නාන්සේ | to equals | ආවොත්. |
| 6 | බන්ඩයි | to inferiors | එන්ඩයි. |
| 7 | මහත්මයා | to a gentleman or an equal, respectfully, or husband. | එන්ට or එන්නට. |
| 8 | රාලහාමි | | එන්ටකෝ or ඒනවා |
| 9 | තමුසේ | | ඒනවාකෝ. |
| 10 | නුඹ, උඹ | familiarly | වරෙන්, |
| 11 | බොලන් | | වරෙන්කෝ. |
| 12 | ඕයි | | එන්. |
| 13 | අඩෝ | to menials or low caste persons. | වර. |
| 14 | තෝ | | වරෙන්, |
| 15 | බොල or බොලත් | | වරෙව්වෝ. |

In reference to the variety of expressions used amongst the Singhalese, the following extract from my Sidath Sangara, p. lxiv., may not be out of place here.

"There are numerous words in the Singhalese which are used towards particular classes of people, e. g., වැඩමකරන්ට 'proceed,' is a term peculiar in its application to the priesthood, whereas යහපත්වෙන්ට, of the like signification, is applied to the nobility, and යන්ට, පලයන්, පලයන්ඩසි, පල to equals and inferiors of different grades. So likewise වලඳන්ට 'eat' is applied to priests, සප්පායවෙන්ට to nobles, කාන්ට to inferiors; and the last, with different modifications, such as කාපන්, කනවාකෝ, කාපත්, කාපන්ඩයි, කා, කාපිය, to equals and inferiors."

So various are the modes of address, adopted by the Singhalese towards particular individuals, that the simple ඔවු 'yes,' used in familiar intercourse, is changed into එහෙයි, when the nobility are addressed; and into එහෙමයි, when the priesthood. The simple නැ '*no*' becomes බෝයි, under similar circumstances; and හොඳයි 'good' is changed to යහපති and හොඳමයි.

Having thus considered the principal matters to which Mr. Stark has attracted attention, I shall in the next place notice the "modes of reverence" referred to in the following paragraph.

"There are several modes of reverence or obeisance among the Singhalese, the shoes also off:—placing the right hand on the breast, and bowing; joining the hands, raising them thus to the forehead, and bowing; falling on the knees, and so doing; and prostration on the face upon the ground." pp. 80, 81.

No native of the lower orders ever thinks of entering a *Walauwa* or "mansion" of a nobleman, without first leaving his slippers at the gate. This is an ancient custom in the East, which was enforced by Europeans for a very long time. Bennet, in his work on Ceylon, p. 100, notices a decision of Government* respecting the assumption by natives of shoes and stockings, which they did to avoid being obliged to leave their

---

* "Mr. John Brixius De Zielfa, the present assessor of the District Court of Galle,............who wore shoes and stockings in Court with my unqualified approbation, was refused admission into the Cutcherry with such European appendages. That gentleman felt that, as a British subject, he had as great a right to wear shoes and stockings as those who were of European birth; but as the Collector chose to make a reference to the Governor, which was followed by the most extraordinary decision, that '*His Excellency would not sanction the adoption of the most comfortable portions of the European and Native costumes; and that the Interpreter must choose one or the other;*' Mr. De Zielfa relinquished his visits to the Cutcherry, rather than the comforts of his adopted dress." A writer in the *Calcutta Review*, December 1849, p. 381, defends the policy of a similar decision in India; but the reader will perceive how different are the costumes of the turban-clad Hindu, and the comb-wearing Singhalese, and therefore how very inapplicable are the writer's remarks to Ceylon, even if they can be justified upon other grounds: "How much excitability, for instance, has been shewn (says the

slippers at the gates of gentlemen whom they visited; and we know of instances in Colombo, where natives of the highest families were refused admission into European houses, because they departed from the ancient custom of leaving their slippers at the door. But, happily, the times are changed! We perceive a great social change in the conduct of Europeans towards natives. From the adoption of English customs we auger happy results, amongst which (although the remark may excite a smile in certain quarters) I may almost predict, the abolition of caste-distinctions and class-prejudices. To proceed:—However stringent was the original custom in regard to going barefooted in the presence of the nobility, there seems to have been but little distinction in the forms of salutation. According to these forms one is entitled to be saluted (except he be a very low-caste person) in the same manner that he salutes his host; for, in the modes of saluting, by clasping the hands, there is no distinction between the noble aristocrat and the humble plebeian. The etiquette amongst the Singhalese is, that a female ought to raise her hands to the forehead, whilst it suffices if a male should only lift them up so high as the tip of her fingers might reach his lips. In the Galle District, it is a serious offence not to return the salutation of a person; and so scrupulous are they in this respect, that the late first Maha Modliar, Illangekoon of Matura, never failed to return the compliment to all the Singhalese who

writer) in respect to what has been called 'the shoe question.' Taking off the shoe or slipper, was no custom introduced by the English. It was, and has been, the established custom of India for ages. If the natives of India claim a conformity to our customs, let them have it by all means on equal terms. Let them have their purgris or turbans in the ante-chamber. A native of whatever degree is perfectly well aware that he cannot call upon a native of high rank, without submitting to his country's etiquette; and he will conform to it without a demur, though he grudges to do so to an European of equal rank. The Bengalis are the only natives (and only a small section of them) who object to it. Why they do so object we never could comprehend. The Greeks, a far more independent, polished, and intellectual people, always left their slippers in the lobby."

paid him the respect by bowing with an *edili*,*—by which is meant the obeisance made by the clasping of the hands together. Of course he never raised his hands to the face when a *Padua* or a *Tom-Tom beater* was the saluter; but even in the case of such persons, he, as is the practice in nearly all the parts of Ceylon where ancient customs are strictly adhered to, made an inclination of his hand or hands, as the case may be, by raising them up in the form of a semi-Salaam of the Hindus. With regard to others of inferior *classes*, no distinction is ever shown by those who correctly understand the etiquette on the subject. A Budhist priest, or Budha is to be worshipped *pasanga pihitawa*, (පසඟපිහිටුවා) as we read in innumerable passages in the Budhist scriptures, that is, by touching the ground with five parts of the body of the saluter. This is difficult to be explained without a representation; but if the reader will only fancy a person falling down on his face,† and then lifting up the body supported by the forehead, the two elbows, and the knees—and then putting his clasped-hands to the forehead, he may perhaps get some conception of a person prostrating in the manner indicated by *pasanga pihitá*.‡

It is pleasing indeed to see well trained natives make the usual salutation between man and man; for they do it in as graceful a manner as a Frenchman makes a bow. On the contrary, nothing can be more offensive to the sight than

---

* In the *Anjali* (Sanscrit) or respectful obeisance, (says Professor Wilson,) the head is slightly bowed, the palms of the hands are brought together, and raised literally to the middle of the forehead, so that the tips of the thumbs only are in contact with it. *Hindu Theatre*, Vol. 11, p. 108.

† "I fell at his feet to worship him." Rev. xix. 10.

‡ This is the same form of "worship," which the Rev. S. Hardy in his Eastern Monachism, p. 25, describes as being performed, "with his forehead to the ground, and touching the ground with his knees and *toes*." But Mr. Hardy is wrong in saying that the "*toes*" should touch the ground. For "*toes*," read "*elbows*."

the half-English and half-Singhalese salutation of some, the *nolens-volens* nod of others, and the ill-looking bow of that foreign people whom a Gajàbáhu made the settlers of the Alootcoor Korle. Like their outward forms of salutation, their language, too, is a mixture of Singhalese and foreign idioms, and is different from that spoken by the real descendants of the Sinha race.

Amongst the Singhalese, a present of some little thing, when made by an inferior to a superior, is considered as a high *mark of respect;* and to refuse it is to insult the donor. The Natives usually take forty leaves of bitel, as the *arghya** of our Hindu neighbours, on visiting their chiefs. A "pingo," or *kada* of cakes and fruits is not unfrequently presented; and this is ornamented with white tender leaves of the cocoanut palm. Amongst equals, presents are exchanged as a mark of *attention;* and, if from a low-caste man, one of a higher caste receives a favor, the latter shows his respect by visiting the former with a pingo, which he takes no farther than the stile of the low-caste man's garden.

Whilst it is a fact that all classes reciprocrate the common courtesies of life, it is also a fact, and one worthy of attention – that the Budhist priests, who receive the homage of the laic, never return the obeisance of any one.

This is, perhaps, from a notion that as a "son of Budha," and indeed, one of 'the three gems of adoration,' the priest is entitled to the same reverence,† which Budha exacted from all beings. For, it is stated by that sage, in his first discourse in the Parájika, on being remonstrated by Viranja against what he considered an unjustifiable departure from decorum and propriety on the part of Gowtama, by not

* "She comes with an *arghya*, a present indicative of respect to a superior. It matters not of what it consists."—*Wilson's Hindu Theatre*, I. p. 312.

† "The protection of the Sangha cannot be received by any one who sits near a priest without permission."—*Hardy's Eastern Monachism*, p. 210.

reverently saluting venerable Brahmins; such as the aged, the honorable, the experienced, and the far advanced in life—that there was not a single being amongst Brahmas, Gods, Sramanas, or Brahmins in the whole universe of the Brahama, the Dewa, and the human worlds, whom he should reverently salute, in whose presence he should rise, or whom he should invite to be seated.*

The scriptures, too, receive the same reverence from the votaries of *Budha,* which they pay to the priesthood. For, as Mr. Justice Stark properly observes (see p. 72) "the *Jâtakapota,* or the book of Incarnations is styled Jâtaka-pot *whanse.*" As to the respectful posture in which the scriptures should be listened to, it is stated in the *Lówedâ-sangrahya,* that "one should neither sit on high whilst the bana is read on the ground, nor stand up whilst it is read on high."—

උඩඉඳබිමකීබණනාසන්නේ
විමැතිවඋඩඉඳසිටනාසන්නේ

The Rev. S. Hardy thus notices the subject, in his work on *Eastern Monachism.*

"The Sramana receives worship from the householder, and he forms part of the Sangha, in which all Budhists profess to take refuge, when they repeat the three-fold formula of protection. The priests never make obeisance to any one, and never pay any outward mark of respect. In the books, they are represented as using the word *tò,* a form of the second person singular that is offensively low, when addressing Kings, or even deities; all other persons use the honorific form of the verb, when addressing them, but they never use it in return; they receive honor from all beings, in all forms; but they never give it to any being in any form."—p. 414.

Mr. Hardy is substantially correct in what he states in the above extract; but the remark respecting *tò,* as being the pronoun used by the priest to the layman, requires qualifica-

* The habits of the Singhalese in respect of the outward marks of respect and attention to Superiors, accord with those of the Hindus; as enjoined by Manu in his Institutes, ii. § 185.—See also, *Tr. Asiatic S.* iii. p. 198., *et seq.*

tion. It is possible that this "form of the second person *singular,*" occurs in books translated from the Pali into the Singhalese; but I have never met with a single passage in any original Singhalese work in which a priest is made to address a laic, much less a King, or a God, with a pronoun "that is offensively low." The word that I have always met with in my reading, as the pronoun used by the priest to the laic (except indeed where the Pali ත්වං *twan* is rendered literally into Singhalese) is තෙපි or තොපි, the form of the second person *plural,* which I need not inform the reader, becomes like other terms of address when used in the *plural* form, an honorific.*

I shall content myself with five examples:—

1. In the Attangalu-Wansa, *Nanda Maha Thèra* is made to address his royal pupil, *Srì Sangabo,* who was also his nephew, with තෙපි *you,* thus: ඉක්බිත්තෙන් එක්දව සෙක ඒ කුමාරයන්ගේ මයිල් නන්දමහතෙරුන්නාන්සේ වැඩිවියවයසටපැමිණි සිරිසඟබෝකුමාරයන් පිරිත්බැනබන අසා අන්තයෙහි හිඳවා මෙසේ වදාරණසේක, මහත් භාග්‍ය ඇති කුමාරයෙනි දැන් තෙපි දන්නාලද බෞද්ධාගම ඇත් තේවිය දන්නාලද සියළු බාහිරශාස්ත්‍රඇත්තේහිදවිය...ආ. "Afterwards, one day, his uncle *Nanda Maha Thèra* recited pirit to Prince Srì Sangabo, who had attained his majority; and, after he had heard *Bana,* addressed him as follows: 'Most noble Prince, (තෙපි) *you* have now mastered the Budhistical doctrines, and also the inferior arts and science.'" &c.

2. The same prince having afterwards refused to assume

---

* The plural form of the second person may be properly used with the ephithet, Lord, Master, &c. c. g. ස්වාමීන තොපි නිස්චල වූගුණ මිහිකතුන්ගෙන් ලදුද, සක්‍රයානම් තෙපිද බ්‍රහ්මයානම් තෙපිද. 'My Lord (addressing Budha) did *you* obtain this unshaken firmness from the goddess of earth? Are *you Sakkra?* Are *you* Brahma?'—*Sarwagnha-gunâlankara.*

the reigns of Government, is thus addressed by the *priesthood,* upon the earnest solicitations of the populace :—

තෙපිකරනලද කුසල් ඇත්තේහිදවිය, &c.

"There is much merit that තෙපි *you* have acquired," &c.

3. King Milindu is thus addressed by Nàgasèna *théra* in the *Milindapprasna ;* and this be it remembered is like the last, a translation from the Pali :—

මහාරජාණෙනි තොපගෙවනාහි උපන් නුවර කොතැන් හිදැයි විචාලසේක. "He inquired, 'Monarch, where is the city of (තොපගෙ) *your* birth,'" &c.

4. In the *Tùpáwansa* the priest Maha-sup is represented as speaking to King *Ajatasastru* thus : මහරජ අනාගතයෙහි ධාතූන්වහන්සේට තීර්ථකයන්විසින් උපද්‍රවපෙනෙයි එවන උපද්‍රව වලකනුසඳහා තොපවැනි සද්ධාසම්පන්න රජුන් ඇතිකල්හිම එකධාතුනිධානයක් කරවනබව වටනේයයි වදාලසේක. "He said, Monarch, danger is to be apprehended in future to the venerable relics, from (the malignity of) heritics. It is as well, whilst there are kings eminently faithful like (තොප) *yourself* to make a depository of relics."

5. Mahasèna, a God of Swarga is addressed by Assagupta thèra with *tepi,* "you," in the following passage in the Milindapprasna:—

එම්බා නිදුක්වූ මහාසේන දිව්‍යරාජයාණෙනි මේසදිව්‍යලෝකය සහිතවූ මනුස්සලෝකයනොහැරම දිවසින්බලන්නාවූ අපි මිලිඳුරජ්ජුරුවන්ගේ නපුරුවූ වාදස බිඳහැර බුඩශාසනයට සංග්‍රහකරන්නට සමර්ථකෙනෙක් තොපහැර නුදුටුම්හ.

"Hail your divine Majesty Mahasena ; we who always behold with our divine eyes these six heavens besides the human world, have failed to perceive any one besides *yourself,* who is able to defeat King Milindu in his artful dialectics, and thereby to nourish the religion of Budha."

I have already made a passing allusion to ආයුබෝවන් "Long life," as a term of greeting amongst the Singhalese. I may here also mention that we use another term which is

ආයුරක්ෂාකාරදෙන්ම "may your life be preserved"; and it is not unusual amongst us to bid one—*Subagaman*, which literally means "Fare-well." The usual mode of taking leave amongst the Singhalese, is by asking *Awasara*, "Leave"—although amongst equals we frequently say, මම ගොහින් එන්නං, "I shall go and *return*," quite different from the Tamil *Várum*, simply, "I will come."

With the above my observations on the forms of salutation and modes of address amongst the Singhalese, terminate; but, before I conclude, I cannot forbear making a few remarks on what Mr. Stark considers the connection between නීල "the royal colour," and "the title of the great."

"*Nila* was thus perhaps what may be called the royal or government colour, and words of that formation may be so derived. There was a නිලමේ (nilame) or Nilleme at the head of several of the departments. It was the title usually given to any high official, and it is still the title of the great officer of government in the temples.

"The term in question may, I conceive, be so rendered accordingly. Thus when the valiant Gaja-bahu Raja, whose city (unlike the banquet house of a great king as his ministers ignorantly represented) had been entered by an enemy, and many captives taken, at length resolved on an expedition for their recovery, he went out from the council with නීලයෝධයා (neela yódayá) the great officer of war. These words, however, have been rendered 'Neela the giant,' and 'the great giant Neela,' as if නීල were a proper name, and not like නීලය nileya, (nilaya) and නීලතල (nilatala) an office, place or situation,"—p. 79.

There is no more connection between *Nila* as a '*colour*,' and *Nīla* as an 'office,'—than there is between *nill* as the verb, "to be unwilling," and *nill* as the noun which signifies "the shining spark of brass in trying and melting the ore." Nor is the appellation of Gajàbàhùs giant, who accompanied him on his expedition to the Solian country, derived from *Nìla* (blue colour,) any more than is the *Nìla Purána* of the serpent God,* or the great *Nìla*, that lofty

* See Asiatic Researches, Vol. xv.

and sacred mountain of the Ràmàyana, whose summit was of pure and bright gold.*

As respects colour Mr. Stark adds.

"The great colour was නීල (nila) the colour of the sky and ocean, and like these, indeed, susceptible of many shades from green to dark blue; but commonly denoting this last, the colour of Vishnu's garment. It is to this colour allusion is so often made in the descriptive writings of the Singhalese poets; as when they sing the praises of feet, soft and beautiful 'as the full blown lotus.'

කොමලසුපිපිසරදිසාපද

"So also when they speak of 'lotus hair,' and the නීලංකාර (nilangkàra) or blue ornament of dark eyes,"—p. 78.

The Singhalese are, doubtless, great admirers of *blue* as a "colour"; yet it is not to that colour which allusion is so often made in the descriptive writings of the poets, as supposed by Mr. Stark. When in singing the praises of the feet, the poet compares them to කොමලසුපිපිසර "the full blown tender lotus," he only compares them to the broad formation, and the tenderness, of the flower—by no means intending to convey its colour. For සර, as a name for the lotus, is a *generic term.* It may either be the *white* or the *red* lotus; but it never signifies the *Nelumbium speciosum,* which is distinguished by *nilupul;* as when we speak of a *nilupulesi,* '*blue*-lotus-eyed,' a term for 'woman,' expressive of her beauty as 'belle,' is in English. The hair, it is true, is compared to *blue* objects, as the tail of a peacock, and sometimes to *green* objects, as the *Valesnaria octandra*;† but never, as I apprehend, to the *lotus:* and the reason for this, what may seem to be, a strange comparison is—*not* that *nila,* "blue," is considered to be a "great," "government," or "royal," colour; but that the Singhalese did not anciently draw a

* The fact however, that one and the same word can in the course of time assume various forms for various objects, proved as it is by numberless examples, requires no further support.—Bopp's Comp. Gram., p. 16.

† See my Sidath Sangra, Note ap. p. xcviii.

distinction between *green, blue,* and *black.* Thus, when we say, නීලංකාර in respect of our eyes, we do not mean, "blue ornament of dark eyes," but simply the darkness of one's eyes, or the dimness which one feels on getting a fit of fainting.

But Mr. Stark is right when he understands the phrase මුවතවර *lotus-mouth,* as referring to "*red* lips;" for it is remarkable that whilst western nations sing the praises of the *lips* signifying the mouth, in a limited sense; the orientals speak of the *mouth* in a like sense to signify the lips. තඹර is specifically the "*red lotus,*" and in comparing the mouth to that flower, we only convey the redness of the lips, as the English bard conveys the same idea, by referring to *Coral.* Speaking of *tambara* Mr. Stark, thinks that "it might well give occasion to the same name as a designation of the Island, තාම්බ්‍රපර්ණි 'Tambraparni,' *red leaf,* whence the classic appellation for Ceylon, *Taprobane.*"—p. 78.

The origin of this word is no longer a matter for speculation. It is well known that it is derived from *Tambavanna,* "copper colour,"—that hue which seems to be held so sacred amongst the Hindus, that, according to the institutes of Manu, (Cap. iv. § 130), it is an offence to pass over even the "shadow of a *copper-coloured* man": but I am glad of the opportunity thus presented, of correcting an error into which the learned translator of the Mahawansa has inadvertently fallen.

Dr. Mill, in recording his opinion on "this most authentic History of Ceylon;" says, in the Bengal Asiatic Society's Journal, for December 1836;—

"This real origin of the celebrated name *Taprobane* (whatever may be thought of the story connected with it in the Mahawansi, and which may seem with greater probability to have arisen from the *Tamra-varna,* or copper colour, of its southern cliffs near *Matura,* so well known to Navigators)—is one of the points of curious and interesting information

which we owe mainly to this publication of Mr Turnour. Whatever had been before suggested on the probable origin of that name, so little now known except in these Budhistic Books, as one of the proper names of the great island of *Lanca* or *Singhala-dwipa*, was in the highest degree forced and improbable (ex. gr. the Hind *Tupuvi-Raban;* or the Island of Ravana.")—p. 830.

Now Dr. Mill was quite right in thinking it was more probable that this name was derived from *tâmra-varna* (which is *tamba-vanna* in Pali) "copper *colour*," than from *tamba panniyo*, "copper *palmed*," given in Mr. Turnour's version of the Mahawansa. For, it appears that Mr. Turnour has fallen into this error by taking the text to be *Tamba pannattha panniyo.* And although he has corrected the text in his *Errata*, by giving as the correct word *Tambavanattha pânayo*, he has, nevertheless, failed to rectify the error in the Translation,—an omission by which he has permitted the passage to remain thus:—

"At the spot where the seven-hundred men, with the King at their head, exhausted by (sea sickness, and faint from weakness) had landed out of the vessel, supporting themselves on the palms of their hands pressed on the ground, they sat themselves down. Hence, to them the name of Tambapanniyo (copper-*palmed*, from the colour of the soil.) From this circumstance that wilderness obtained the name of Tambapanni. From the same cause also this renowned land became celebrated (under that name.)—*Mahawansa*, p. 50.

With all the deference due to the memory of so distinguished an Orientalist as Mr. Turnour, I venture to offer the following translation:

"The seven-hundred men, with the king at their head, who had come from thence, landed out of the vessel—exhausted and faint from weakness; and sat themselves down by pressing the palms of their hands on the ground. Whereby their palms became *(tamba-vanna,)* copper *coloured.* From this circumstance that wilderness obtained the name of *Tambapanna;* and from the same cause also this renowned land became designated by that name."

The Tìka has the following explanation, to which we append a Translation; and it fully bears out the correctness of the text and the conjecture of Dr. Mill.

Tambapanna yató ahùti—yató, yasmá tamba bhumi-rajéhi phutthatta tésanpàni tambawanno ahósi; tatótasmá sópadésócha évasaddéna gahítametta nagarancha ayan dípóchati imé sabbé tambapánina maká ahésunti atthó.

That is:—*Tambapanni yatò ahùti,* &c.—signifies "Since by reason of touching the dust of *copper-coloured* earth, their palms became *copper coloured;* by reason thereof was this province, the city (built therein), and this Island, designated *Tambapàni,*" &c.

Having thus ascertained the origin of this classic appellation for Ceylon, I purpose, before concluding, to advert to an important topic suggested by the following remarks on the subject by Dr. Mill:—

"Whenever corresponding words in the *Pali* and *Singhalese* occur, as they do every where, I believe it will be invariably found that the *latter* (the vernacular words of the people of the Kandian and Maritime provinces of Ceylon,) *resemble most closely* the Sanscrit original of both:—whereas the former, the sacred language, takes in all words that admit of it, the same sort of peculiar variation which belongs to the tongues of northernmost India,—showing evidently that it was *thence*, and not from *Ceylon*, that the peculiar language as well its institutions of Budhism came to the Island,—as the *Mahawansi* itself distinctly asserts. To take but one out of the many instances that might be alleged, we may give one of the most remarkable and early names of the Island, viz. *Tamba-pannyo*, as the Pali name is given in p. 35 of this specimen of the *Mahawansi*, viz. the "copper-*palmed;*" in Sanscrit *Tamra-pâni.* Now this Sanscrit form, so different from the *Pali*, is actually the present Singhalese for the same thing, as I was assured by a competent scholar on the Island; and a very convincing proof that it has ever been so, may be seen in the name by which the Island was universally known to the ancients and to *Cosmas* Indicopleustes when he visited it, viz., *TAPROBANE.* The Greeks would be just as unlikely, to introduce this *r* where it did not exist, as any other languages of India, besides the northernmost ones would be to drop it where it before existed: but this is a universal character of the Pracrit and of the present Hindui,

(as seen in this word, *tamba*, copper, *Kàm*, "work" for *karm*, &c. &c. &c.).—*Beng. A. Society's Journal*, vol. v., p. 830.

Without controverting the main position of the learned Doctor, viz., that there was a connection between the History of Ceylon before the Christian æra, with that of Maghada, or that part of northern* India which we now call Bihar; I may be permitted to remark that the Singhalese resembles the *Pali* more than the *Sanscrit*;† and this is the case not only in respect to the general structure of the language, but in reference to the particular appellation given to this

——"utmost Indian isle, *Taprobane*."

For, although Dr. Mill states on the authority of what he regarded a "competent scholar on the Island"—that "the Sanscrit form *(tamra-pani)* so different from the Pali, is actually the present Singhalese‡ for the same thing;" it is nevertheless very clear that the Singhalese word, *Tammana* for the same place,§ is derived from the Pali, and not from the Sanscrit. From the fact, that this Island was anciently called *Taprobane* by Western nations, especially the Greeks, who, it is probable to suppose, "would be just as unlikely to introduce this *r* where it did not exist, as any other nations of India; besides the Northernmost ones would be to drop it where it before existed;"—a presumption doubtless arises in favor of this name having been of *Sanscrit* origin. But we cannot give much weight to this presumption, when the same facts upon which it is based may render the truth of a different hypothesis probable, viz., that the Greeks, after the Wijayan æra, were indebted for the name to persons who expressed

---

* "Our language furnishes us with strong evidence against the supposition that it belongs to the *Southern* class of languages."—*Sidath Sangara*, p. lvii.

† The Singhalese became incorporated with Sanscrit forms only at a very recent date. See *Sidath Sangara*, pp. xxx. liii. clxiv.

‡ In Singhalese historical works, *Tambapanna* is called *Tammana*; See Raja-Walia, and Forbes' Eleven Years in Ceylon, vol. 1. p. 11. Also Upham's works, vol. ii., pp. 174-5.

§ "They returned from their destruction to *Tammana*-nuwara, or the city of *Tammana*."—*Rájawalia*.

themselves in Sanscrit, or in a dialect of Sanscrit origin.* For, whilst it is quite clear from the writings of the Greeks, that they were indebted to others† at a comparatively modern date, (after the Christian era) for the information recorded by them, it is a fact that ancient rock inscriptions, recorded in India by the great Monarch Asóka (B. C. 259.) contains the name *Tamba-panni*, without the Sanscrit *r*, and in the integrity which it occurs in the Mahawansa ;—and this too, be it remarked, in a sentence which gives two Sanscrit names, " Satiyaput*t*ra " and "Katalaput*r*a "—the Pali of which would be, *Satiyaputta* and *Kataliputta*. I extract the following passage from the *Girnar Inscription*.‡

" Every where within the conquered Provinces Raja Piyadasi, the beloved of the Gods, as well as in the parts occupied by the faithful, such as *Chòla*, *Pida*, *Satiyaputra*, and *Kataliputra*, even as far as *Tambapanni*—and moreover, within the domains of Antiochus the Greek." &c. &c.

The Singhalese word *Tammana*, clearly bears greater affinity to the Pali *Tambapanna*, than to the Sanscrit *Tambrapani ;* and this relation may be further illustrated by the greater resemblance between those two languages, than between the Sanscrit and Singhalese. I propose to exhibit this by presenting the reader with a number of words ; and with that object I submit the following observations :—

An opinion seems to prevail that the Sanscrit is entitled to greater claims to originality than the Pali ; and peculiarities

* " I am inclined to suggest that the name of Tambapani, Tambapanni, Tambrapanni of the Pali historians, which has been converted into Taprobane by those of the Western world, may have had its origin when Vijeya and his followers made known their first conquest in Lanka to the race from which he was descended, and from whom he had been expelled "—*Forbes*, vol. 1, pp. 10. 11.

† There is a river called *Tambrapani* in the southern Peninsula of India, and it is not improbable that the Natives of India pronounced the Pali word (Tambapanni) according to the peculiarity of their own language, and in accordance with the name with which they had been already familiar, viz., *Tambrapani.*

‡ Bengal Asiatic S. Journal, vol. vii., p. 159.

in the formation of the latter language have been exhibited to show that it is a dialect of the Sanscrit, if not immediately transformed from that language.* Upon so important and weighty a question—one, on which the learned world is much too divided—it may not be proper to express an opinion without fully entering into an investigation of the subject: nor is it necessary for my purpose to do so here. My object at present is briefly to show the particular relation which the Singhalese bears to the Pali, and to explain that the Sanscrit element in the Singhalese, to which Dr. Mill refers in the paragraph above extracted from his notes, is one of comparatively modern introduction.† I shall briefly allude to several peculiarities.

1. It is a phenomenon well known, that in many Sanscrit words a ක *k* is frequently followed by a ෂ *sh*; and that in their corresponding Pali terms, the *sh* is changed into the aspirate of *k*. Thus:

වෘක්‍ෂ *vriksha* into රුක්ඛ *rukkha*, 'tree.'
ක්‍ෂමා *kshamā* into ඛමා *khamā*, 'forgiveness.'
දක්‍ෂිණ *dakshina* into දක්ඛිණ *dakkhina*, 'south.'
ක්‍ෂුර *kshúra* into ඛර *khara*, 'razor.'
ක්‍ෂෙත්‍ර *kshettra* into ඛෙත්ත *khetta*, 'field.'

On comparing the above with their corresponding Singhalese words, there is clear evidence that the Pali forms are alone changed into the Singhalese. Thus,

| San. | Pali. | Sing. |
|---|---|---|
| වෘක්‍ෂ | රුක්ඛ | රුක් 'ruk'. |
| ක්‍ෂමා | කමා | කමා 'kamá'. |

* "From an examination of the structure of the Cuneiform-Persic, and Zandic, the oldest forms of the dialects of ancient Persia, it is evident that both have been derived from the Sanscrit: the relation which they bear to the latter being analogous to the relation of the Pali or Pràkrit to the same—of Italian to Spanish or Latin."—*Journal of R. A. S. Great Britain and Ireland*, vol. xvi., part I., p. 194.

† See my *Sidath-Sangara*, p.p. xlviii, clxxxvii.

| San. | Pali. | Sing. |
|---|---|---|
| දක්ෂිණ | දක්ඛිණ | දකුනු 'dakunu'. |
| ක්ෂුර | ඛුර | කර 'kara'. |
| ක්ෂෙත්‍ර | ඛෙත්ත | කෙත් 'ket'. |

It is unnecessary to multiply examples; but I may mention the following, which easily occur to my mind; භික්ෂු, භික්ඛු, භික් 'an ascetic'; චක්ෂු, චක්ඛු, සක් 'eye'; යක්ෂ, යක්ඛ, යක් 'demon'; මොක්ෂ, මොක්ඛ, මොක් 'niwan'; ලක්ෂ, ලක්ඛ, ලක් 'a lack'; අක්ෂි, අක්ඛි, අක් 'an eye'; &c.

2. Another phenomenon to which I shall advert, is, that when the Sanscrit vowel *ri*, which is not known to the Pali and Singhalese, is found changed into another vowel in the Pali, that same vowel is adopted in the Singhalese. Thus,

| San. | Pali. | Sing. |
|---|---|---|
| ඍජු *riju* | උජු *uju* | උදු *udu*, 'direct'. |
| මෘදු *mridu* | මුදු *mudu* | මුදු *mudu* 'tender'. |
| ඍෂි *rishi* | ඉසි *isi* | ඉසි *isi* 'a Rishi'. |
| ඍද්ධි *ridhi* | ඉද්ධි *iddhi* | ඉදු *idu*.* |
| පෘෂ්ඨ *prishtha* | පිට්ඨ *pittha* | පිට *pita* 'back'. |
| ගෘහ *griha* | ගේහ *geha* | ගේ *gé* 'house'. |
| දෘඪ *dridha* | දළ්හ *dalha* | දළ *dala* 'coarse'. |
| කෘත *krita* | කත *kata* | කළ *kala* 'made'. |
| හෘද *hrida* | හද *hada* | හද *hada* 'heart'. |
| කෘමි *krimi* | කිමි *kimi* | කිමි *kimi* 'worm'. |
| මෘත *mrita* | මත *mata* | මළ *mala* 'dead'. |
| සෘගාල *srigàla* | සිගාල *sigāla* | සිවල් *sival* 'jackal'. |
| වෘක්ෂ *vriksha* | රුක්ඛ *rukkha* | රුක් *ruk* 'tree'. |

3. It is well known that in the Pali the conjunct *r* is frequently lost, which is found in the Sanscrit. When this is the case, the corresponding words in the Singhalese bear a greater affinity to the Pali than to the Sanscrit. Thus,

---

* A word signifying 'the power to go through the air.'

| San. | Pali. | Sing. |
|---|---|---|
| තාම්‍ර *tamra* | තම්බ *tamba* | තඹ 'copper'. |
| වර්ණ *varna* | වණ්ණ *vanna* | වණ 'colour'. |
| කර්ණ *karna* | කණ්ණ *kanna* | කණ *kana* 'ear'. |
| පර්ණ *parna* | පණ්ණ *panna* | පන් *pan* 'leaf'. |
| අර්ධ *ardha* | අඩ්ඪ *addha* | අඩ *ada* 'half'. |
| වස්ත්‍ර *wastra* | වත්ථ *wattha* | වත් *wat* 'raiment'. |
| වක්ත්‍ර *waktra* | වත්ත *watta* | වත් *wat* 'face'. |
| ඊර්ෂ්‍යා *írshiá* | ඉස්සා *issa* | ඉස *isâ* 'enmity'. |
| ක්ෂෙත්‍ර *kshetra* | ඛෙත්ත *khetta* | කෙත් *ket* 'field'. |
| ශ්‍රද්ධා *shraddha* | සද්ධා *saddha* | සැදැ *seda* 'faith'. |
| අග්‍ර *aggra* | අග්ග *agga* | අග *aga* 'chief'. |
| ස්වර්ග *swarga* | සග්ග *sagga* | සග *saga* 'heaven'. |
| ශ්‍රමණ *sramana* | සමණ *samana* | සමන* 'priest'. |
| ධර්ම *dharma* | ධම්ම *dhamma* | දම් *dam* 'doctrine'. |

4. The semivowel ඓ *ai* is unknown to the Pali, as it is to the Singhalese. When we therefore take Sanscrit words in which this letter occurs, and compare them with their corresponding Pali and Singhalese words, we obtain the same results to which we have already adverted; as for example:

| San. | Pali. | Sin. |
|---|---|---|
| ඓශ්වර්ය *aishwarya* | ඉස්සරිය *issaria* | ඉසුරු *isuru* 'prosperity'. |
| ඓරාවණ *airáwana* | ඒරාවණ *eráwana* | එරවණ *erawana* a name. |
| කෛලාශ *kailásea* | කේලාස *kélasâ* | කෙලෙස් *keles* a name. |
| තෛල *taila* | තේල *tèla* | තෙල් *tel* 'oil'. |
| වෛර *vaira* | වේර *vèra* | වෙර *vera* 'hatred'. |

5. The results are precisely the same when we compare Sanscrit words in which the semivowel *ow* ඖ occurs with their corresponding words in the Pali and Singhalese, in which this vowel sound is entirely lost. Thus, for instance,

| San. | Pali. | Sing. |
|---|---|---|
| ඖෂධ *owshadha* | ඕසද *ósadha* | ඔසු *ousu* 'drug'. |
| ගෞර *gowra* | ගෝර *góra* | ගොර *gora* 'white'. |

* Vide ante, p. 245.

| San. | Pali. | Sing. |
|---|---|---|
| චෞර *chowra* | චෝර *chóra** | සොර *sora* 'thief'. |
| නෞ *now* | නාවා *nàvà* | නැව *neva* 'ship'. |
| මෞක්තික *mowktika* | මුත්තික *muttika* | මුතු *mutu* 'pearl'. |
| රෞරව *rowrava* | රෝරුව *ròruva* | රෝරුව *róruva* a name. |

6. A silent *s* before certain consonants, which is to be found in the Sanscrit, is lost in the Pali, except perhaps in conjunction with *v* ව; and this is exactly the case in their corresponding Singhalese words. Thus,

| San. | Pali. | Sing. |
|---|---|---|
| වස්තු *wastu* | වත්ථු *watthu* | වත් *wat* 'riches'. |
| ස්කන්ධ † *skandha* | ඛන්ධ *khandha* | කඳ *kanda* 'trunk'. |
| ස්තම්භ *stambha* | ථම්භ *thambha* | ටැඹ *temba* 'pillar'. |
| ස්තුති *stuti* | ථුති *thuti* | තුති *tuti* 'thank'. |
| අස්ථින් *asthin* | අට්ඨි *atthi* | ඇට *eta* 'bone'. |
| අෂ්ට *ashta* | අට්ඨ *attha* | අට *ata* 'eight'. |
| පෘෂ්ඨ *prishtha* | පිට්ඨ *pittha* | පිට *pita* 'back'. |
| පුෂ්ප *pushpa* | පුප්ඵ *puppha* | පුප් *pup* 'smell'. |
| ස්ථවිර *sthawira* | ථේර *thèra* | තෙර *tera* 'elder priest'. |
| තුෂ්ටි *tushti* | තුට්ඨි *tutthi* | තුටු *tutu* 'gladness'. |
| හස්ත *hasta* | හත්ථ *hattha* | හත් *hat* 'hand'. |

---

* The Pali ච is changed into ස in the Singhalese, since the former sound is not known to our language. See *Sidath Sangara*, p. liv.

† For want of Sanscrit and Pali types a few Orthographical errors have been left uncorrected.

# PROCEEDINGS OF MEETINGS

OF THE

# CEYLON ASIATIC SOCIETY.

---

## EVENING MEETING,

## HELD ON THE 2D OCTOBER 1856.

---

*Present* :— C. P. Layard, Esq., W. Skeen, Esq., R. Dawson, Esq., L. de Zoysa, Esq., Dr. Willisford, Captain Dudley, C. Lorenz, Esq., L. Nell, Esq., J. Dalziel, Esq., M. Coomarasamy, Esq., J. Neitner, Esq., Rev C. Alwis, Rev. J. Thurstan and the Assistant Secretary.

Mr. Layard stated, that the object of the Meeting was to take into consideration the mode in which this Branch of the Asiatic Society could be revived and set in action. The gentlemen present were all aware, that owing to different causes, one of which was the removal from the Island of several gentlemen of known scientific attainments who took an active part in the transactions of the Society, the Institution had been dormant for some time. It was however, thought desirable that an effort should be made to revive it now, and to obtain for it the support of the public; and it had been intimated to him, that if the Society should succeed in obtaining the support so much desired, it would be in their power to secure the publication of some works of Oriental literature of undoubted importance. Mr. Gogerly,

whose absence that night he (Mr. Layard) regretted, spoke in a letter which had been just received, of the assistance, which the Society might, if properly encouraged, derive from its Native members. He also referred to Mr. de Alwis, who was prepared with several papers on subjects of interest, and to Mr. de Zoysa, whom he thought competent to undertake the translation of the portion of the Mahawanso, which had been left untranslated by Mr. Turnour. Mr. Neitner had some very valuable papers on the Natural History of the Island, and he (Mr. L) believed there were others in the Island, who would, with the opportunity afforded of doing so, render much assistance in various other branches of Science. It was therefore necessary, that the Secretary should be instructed to call a General Meeting for the purpose of electing Members and Office bearers. He (Mr. L.) had entertained hopes of obtaining for the Society the services of Captain Oldfield as Secretary; but he regretted to say that that gentleman, who was prevented from attending the meeting by an indisposition, had communicated that his contemplated removal from Colombo would render it impossible for him to accept the office. He had, however, kindly promised, that while at Trincomalie, he would at all times be ready to devote a portion of his time to the Society's service. They had therefore, not only to select a gentleman for the office of Secretary, but also to elect members for a Committee. It would be desirable, to ask His Excellency the Governor to be the Patron of the Society, and the Hon'ble the Chief Justice, who he, (Mr. L.) was glad to find took a deep interest in the Society's welfare, as Vice-Patron. Among other matters of difficulty which the Society had to contend with at present, the want of a place to transact business in, was perhaps not the least. He, Mr. Layard, had spoken to several gentlemen on the subject, and it was suggested by some, that this want might be remedied

by the erection of a story over the United Service Library. Indeed he (Mr. Layard) could name gentlemen who had promised to subscribe £10 each towards the purpose, which he thought could be easily effected. The Colonial Secretary, with whom he had also conferred, had expressed his willingness to aid in the promotion of the measure, and if a representation were duly made, he (Mr. L.) had no doubt that they might be able to secure the sanction of the Government as well as a grant from the Legislature for making such necessary alteration in the U. S. Library, as should render a portion of that building available for the use of the Society, and for a Public Museum. To facilitate the attainment of the object in view, he had, through the kindness of Mr. Churchill, procured a plan of the proposed alterations, which he (Mr. L.) had great pleasure in laying before the Meeting.

Mr. Alwis stated, that owing to certain repairs which the rooms of the Loan Board had lately undergone, it had become necessary to remove the Society's Library and its Museum (which had been in those Rooms) into an apartment of the Colonial Secretary's Office, and that the Society at present had no place in which they could meet or transact business. Owing to the causes to which Mr. Layard had referred, the Society had been dormant for some time past. Its last General Meeting was held so far back as February 1854, and no Committee Meeting had been convened since the 17th August of that year. The Proceedings of those Meetings would be found published in the Society's Journal for 1853-54, which had yet to be issued to the subscribers. It was, however, gratifying to notice, that owing to the liberality of Government, and the kindness of the gentleman who presided over its Printing Establishment, the last volume of the Journal, which contained several interesting papers, extending over 300 pages, had been printed without any expense to the Society. It was attributable to this circumstance, that they were able to

find on reference to the accounts of the Treasurer, *a balance,* though a trifling one, *in favour* of the Society. It amounted to £8 7*s.* 3*d.*, and would doubtless have been larger, had the subscriptions of the two past years been collected. The omission to do this was not unintentional. It was considered, that while the operations of the Society were unavoidably suspended, it was neither just nor fair to call upon subscribers to pay. If it be the wish of this Meeting that these operations should be revived, it was not only necessary to select a Secretary, but also desirable to place at the disposal of the Society a room in which its Library might be placed, and its proceedings held.

After some desultory conversation, in which several gentlemen took part, Mr. Dawson remarked, that public support should not be solicited, until the Society had been completely reorganized. It was most necessary to hold a Meeting, and to appoint a Committee, before an application could be made with anything like reason, either for the assistance of Government or of the public. With regard to the proposal to build a story over the Library, he (Mr. Dawson) feared that it was not a practicable one. The Library was public property, and although we might contribute to the erection of an upper story, the building itself would remain vested in the public, and not in the Society. He would therefore propose, that the Secretary might be instructed temporarily to rent a house in the Fort, and he thought that the funds of the Society, though small, would enable them to do so, until other arrangements could be made by which the Society might be enabled to obtain a permanent place for the despatch of business.

It was then *Resolved:*

1.—That Mr. Dawson be kindly requested to look for and engage a building in the Fort, in which the Society might be accommodated for the present. (Mr. Dawson expressed his assent).

2.—That the Assistant Secretary be instructed to convene a General Meeting of the Society for Saturday the 11th instant, at 4 P. M. (Dr. Willisford kindly promised to allow his house for the proposed Meeting, which was accepted.)

3.—That a deputation consisting of Mr. C. P. Layard, Dr. Willisford, Mr. Dawson, The Rev. Mr. Thurstan, Mr. J. Alwis, Mr. Coomarasamy, and Mr. Lorenz, be requested to wait on His Excellency the Governor, The Hon'ble the Chief Justice, and the Hon'ble the Major General, and to request them to join the Society, and to allow themselves to be nominated the Patron and Vice-Patrons of the Society respectively: (assented to by the Gentlemen nominated as a deputation.)

JAS. ALWIS,
*Asst. Secretary.*

## GENERAL MEETING, HELD 11TH OCTOBER 1856.

*Present*:—The Reverend D. J. Gogerly, in the Chair.

The Rev. J. D. Palm, C. P. Layard, Esq., J. Bailey, Esq., George Lee, Esq., L. de Zoysa, Esq., M. Coomarasamy, Esq., R. Dawson, Esq., Capt. Dudley, W. Skeen, Esq., C. A. Lorenz, Esq., Dr. Willisford, J. Neitner, Esq., and the Assistant Secretary.

Read the proceedings of the last Evening Meeting. Mr. Layard said, that in accordance with the 3rd Resolution just read, he had spoken to His Excellency the Governor intimating to him, on behalf of the Society, that a deputation was appointed to wait upon him, and that His Excellency expressed his willingness to receive them at a time which he would afterwards appoint. Mr. Dawson said, that he had made inquiries, and had engaged at a rental of £1 per month, two rooms behind the Chamber of Commerce, and that in his

opinion they were sufficient to hold the Society's Museum and Library. If however, they were deemed insufficient to hold the Society's General Meetings, he had no doubt that the Chamber of Commerce would, on such occasions, gladly accommodate the Society within their Rooms. *Resolved*, that the rooms engaged by Mr. Dawson be rented on behalf of the Society at £1 per month, commencing from the 1st November next.

The Assistant Secretary laid before the Meeting a Memorandum in which the Committee of 1854 resolved to discontinue the services of the Society's Taxidermist, and to appoint a peon at a salary of £1 per month, stating at the same time, that the Society had no peon at present, and that it would be desirable to engage one, especially to take charge of the Society's new rooms.

Mr. Skeen drew the attention of the Meeting to the state of the Society's finances, and laid on the Table the accounts, shewing a balance in favour of the Society, of £8 7*s.* 3*d.*

Read a letter from the Secretary of the Auckland Museum to Mr. Dawson, requesting that that gentleman would use his influence with the Ceylon Branch of the Royal Asiatic Society, to forward to the Institution first mentioned, some of the productions of this Island.

*Resolved*, on the suggestion of Captain Dudley, that a letter be written to Colonel Hope, requesting that he would be pleased to communicate to this Society the result of his Meteorological observations.

The following Gentlemen were then proposed and elected Members of the Society.

| | |
|---|---|
| J. Bailey, Esq. . . | *Proposed by R. Dawson, Esq.*<br>*Seconded by C. P. Layard, Esq.* |
| J. Neitner, Esq. . | *Proposed by Dr. Willisford.*<br>*Seconded by R. Dawson, Esq.* |

| | |
|---|---|
| Major T. Skinner . | *Proposed by C. P. Layard, Esq.*<br>*Seconded by R. Dawson, Esq.* |
| Colonel Hope . . | *Proposed by C. P. Layard, Esq.*<br>*Seconded by R. Dawson, Esq.* |
| F. Churchill, Esq. . | *Proposed by C. P. Layard, Esq.*<br>*Seconded by R. Dawson, Esq.* |
| Captain Gosset . . | *Proposed by C. P. Layard, Esq.*<br>*Seconded by R. Dawson, Esq.* |
| L. Nell, Esq. . . | *Proposed by J. Alwis, Esq.*<br>*Seconded by C. A. Lorenz, Esq.* |
| H. Ball, Esq. . . | *Proposed by J. Alwis, Esq.*<br>*Seconded by R. Dawson, Esq.* |
| The Rev. J. Thurstan . | *Proposed by R. Dawson, Esq.*<br>*Seconded by C. P. Layard, Esq.* |

---

The Office bearers and Committee, with the Patron and Vice-Patrons of the Society for the current year, commencing from this date, were then nominated and appointed as follows:—

*Patron.*

His Excellency the Governor of Ceylon.

*Vice-Patrons.*

The Hon'ble the Major General.
Sir William Carpenter Rowe, Chief Justice.
The Right Rev. the Lord Bishop of Colombo.

*President.*

The Hon'ble C. J. MacCarthy, Esq.

*Vice-President.*

The Rev. D. J. Gogerly.

*Secretary.*

Dr. Willisford.

*Assistant Secretary.*

James Alwis, Esq.

*Treasurer.*

C. A. Lorenz, Esq.

*Librarian, Curator, and Corresponding Secretary.*

J. Neitner, Esq.

COMMITTEE.

George Lee, Esq.
C. P. Layard, Esq.
M. Coomarasamy, Esq.
Major Skinner.
W. Skeen, Esq.
Dr. J. B. Misso.
L. de Zoysa, Esq.
R. Dawson, Esq.
L. Nell, Esq.
Rev. J. Thurstan.

---

The Assistant Secretary laid on the table two papers which he proposed to read, viz. a translation of the *Attanagala wansa,* or the History of three Kings, comprising an account of King Sangatissa, during whose reign was set up the so-called "glass pinnacle" which was at present a subject of much inquiry in England. Also a paper on "The Titles of Address amongst the Singhalese."

Mr. Layard presented a paper on the "Principles of Singhalese Chronology," by the Rev. C. Alwis. Mr. Neitner stated, that he had several Entomological papers to present to the Society, and that he would be glad if steps were taken at once for their speedy publication.

The Chairman remarked, that according to the Rules of the Society, it was desirable to submit all papers to a Reading Committee for their approval, before their publication could be sanctioned.

*Resolved,* that owing to the lateness of the hour, the subject of the appointment of a Reading Committee be deferred till the next General Meeting.

*Resolved,* that the Treasurer be requested to collect subscriptions for the current year, commencing from the 1st instant, and that the next General Meeting be held in the course of November next.

The business of the Meeting having ended, a vote of thanks was given to the Chairman, and the Meeting separated.

D. J. Gogerly.

GENERAL MEETING, HELD 11TH NOVEMBER 1856.

*Present* :—The Rev. D. J. Gogerly in the Chair.

L. Nell, Esq., M. Coomarasamy, Esq., C. P. Layard, Esq., J. Bailey, Esq., W. Skeen, Esq., C. A. Lorenz, Esq., L. De Zoysa, Esq., Rev. J. D. Palm, Rev. J. Thurstan, the Secretary and Assistant Secretary.

The proceedings of the Meetings of October 11th and November 1st, having been read and explained, the Secretary called attention to the Resolution of the 11th October, referring to the appointment of a Reading Committee.

*Resolved,* that the following gentlemen be requested to act as such :—M. Coomarasamy, Esq., The Rev. D. J. Gogerly, L. Nell, Esq., J. Neitner, Esq., J. De Alwis, Esq.

*Resolved,* that the following gentleman be elected as Corresponding Member of this Society, Dandries De Silva Gooneratne, Mohandiram of Bentotte.

Proposed by C. Lorenz, Esq.
Seconded by H. Muttukistna, Esq.

*Resolved,* that the Rev. B. Boake be elected as Ordinary Member of this Society.

Proposed by C. P. Layard, Esq.
Seconded by J. Bailey, Esq.

Mr. De Alwis then proceeded to read his Papers, entitled

" Native Title of Address," and " The Attanagala wansa." *Resolved,* that these papers be referred to the Reading Committee.

Mr. Coomarasamy having read a paper entitled a " Synopsis of the Saiva Siddantam, or The Religious Philosophy of the Hindoos." *Resolved,* that it be referred to the Reading Committee for report.

The first No. of the Society's Journal being out of print, and frequent applications being made for the same, it was resolved that Mr. Skeen be requested to reprint the first No., and to furnish 100 copies to the Society.

Jas. Alwis.
*Assistant Secretary.*

GENERAL MEETING, HELD 27TH FEBRUARY 1857.

*Present* :—The Rev. B. Boake in the Chair.

J. Neitner, Esq., C. P. Layard, Esq., W. Skeen, Esq., H. Muttukistna, Esq., L. Nell, Esq., M. Coomarasamy, Esq., Rev. J. Kats, L. De Zoysa, Esq., and the Secretary.

The Minutes of the last Meeting having been read, and confirmed.

Mr. C. P. Layard suggested, that as some of the specimens of Natural History were evidently falling into decay, the Secretary be authorized to incur any necessary charges in maintaining them.

The question having been discussed, it was resolved accordingly.

*Resolved,* that Messrs. Layard, Neitner, Skeen and Willisford, be appointed a Sub-Committee to arrange and report on the Library and Museum.

L. Leisching, Esq., having been proposed by C. P. Layard, Esq., and seconded by J. Neitner, Esq.

He was elected accordingly.

F. W. Willisford,
*Secretary.*

ANNUAL MEETING, HELD 21ST JANUARY 1858.

*Present:*—Dr. F. H. Kelaart, in the Chair.

The Rev. B. Boake, M. Coomarasamy, Esq., J. Alwis, Esq., L. De Zoysa, Esq., Dr. Willisford, W. Skeen, Esq., and J. Capper, Esq.

The Minutes of the last Meeting having been read, the Secretary proceeded to read the Report of the Committee for the past year.

The Ceylon Branch of the Royal Asiatic Society was re-organized in October 1856, and having secured rooms for its Library and Museum, affording far greater accommodation than had previously been the case, has now 37 resident and 32 non-resident Members. To this number, it is hoped there will be many accessions in the course of the present year. The return to Ceylon of Mr. Capper, one of the originators of the Society, is an event from which the Committee augur many and permanent benefits. His former services are sufficiently conspicuous to need more than a passing observation. The palmy days of the Society were those in which that gentleman officiated as Secretary with unflagging interest, and the most constant attention. To the same duties he has kindly signified his willingness again to devote his leisure and abilities; and the Committee have the greatest satisfaction in submitting his name as Secretary, among the List of Office-bearers for the ensuing year, con-

jointly with Mr. Alwis, to whom the Society owes considerable obligation for his present services.

From other causes also, the Committee anticipate for the future a more vigorous action in this branch of the Royal Asiatic Society. During the construction of the Railway, and from the contemplated sojourn in the Island of an enlarged Military force, many scientific gentlemen will probably arrive, from whose enlightened research much may be expected, and who will doubtless gladly avail themselves of the facilities afforded by this Society for the prosecution and publication of their investigations.

From the Treasurer's account it will be perceived, that the income of the Society for the last 14 months has been £47 1*s.* 9*d.*, exclusive of subscriptions not yet collected. Of the amount already collected, £25 16*s.* 5*d.* have been expended, leaving a balance of £21 5*s.* 4*d.* in the Treasurer's hands, Against this balance, however, there is a liability of nearly £14, for house rent, for which, as yet, no demand has been made; and considering that the purchase of several new works on Oriental Literature is thought desirable, the necessity for increased aid in the way of donations and subscriptions is manifest. Indeed, were it not for the liberality of the Government in permitting the Journal of the Society to be printed free of expense at the Government Press, the funds of the Society could not have borne the outlay necessary for the publication of its papers. This arrangement, however, while it has had the effect of saving considerable expenditure, and has enabled the Committee to issue their Journals in a superior style, is yet attended with some inconvenience, which the Committee hope, with the sanction of the Society, they will shortly be able to obviate. The inconvenience alluded to, is the delay, which from the large amount of work required for Government purposes, necessarily demanding the immediate attention of that estab-

lishment, inevitably takes place in the issue of the Society's Journal. To this cause is attributable the non-appearance of a reprint of the 1st Number of the Society's Journal, which had been resolved upon, and of which copies are not now to be had, and the delay that has arisen in the publication of the 4th Number of the new series, of which only 100 pages have been completed. To remedy this evil, it is proposed that the Society should engage a Compositor, to be employed under Mr. Skeen upon the papers now in hand, so as to enable him to issue the forthcoming Number at an early date.

Your Committee bring this subject thus prominently before the Society, as they have had several applications for complete sets of the Journals, not only from subscribers, and scientific gentlemen visiting Ceylon, but also from Oriental scholars in England, which they have been unable to comply with, from the cause already stated.

The Journal now in course of publication will contain a larger amount of information than any of its predecessors, and of a character interesting alike to the scholar, the antiquary, and the man of science. It will consist of papers by Mr. Neitner, describing numerous new species of Ceylon Coleoptera; a Translation of certain chapters of the Mahawanse, describing the magnificent works for Irrigation constructed by King Parakkrama Bahoo, A. D., 1153-1186, with an Introduction and Notes by Mr. De Zoysa; a Translation of the Attanagalawansa, or the life of Sri Sangala, with an Introduction and Notes by Mr. J. Alwis; an Essay on Hindu Philosophy, by M. Coomarasamy; a Paper on the Singhalese Method of computing Time, by the Rev. C. Alwis; and a Paper on Honorary Titles and Modes of Salutation among the Singhalese, by Mr. J. Alwis:—to which it is proposed to add, a Paper on Singhalese Music by Mr. L. Nell; one on new and interesting species of Nudibranchiate Mol-

luscs, Sea Anemones and Planaria, found in the Harbour of Trincomalie, by Dr. Kelaart; and also a paper by Mr. J. Alwis, on the supposed identity between Nagasena, of Budhistical Annals, and Nagarjuna, the character who holds a distinguished place in the Raja Tarangini. The three last papers will be read to the Society, and the Committee have no doubt but they will be found of sufficient interest to be submitted to the Committee of Papers with a view to their publication.

Your Committee desire to bring to the notice of the Society, the state of its Library and Museum.

In addition to the Reports and Medals of the Great Exhibition of 1851, entrusted to the Society, the Committee have to acknowledge the presentation by His Excellency The Governor, of sixteen volumes of the original prospectusses of the various exhibitors; the Reports and Medals of the Paris Exhibition, awarded to this Island; and the Report, &c., of the Madras Exhibition. They also beg to acknowledge the receipt of many valuable works in the course of the past year.

These presentations and donations invest your Society with a character and importance which it is desirable to maintain. As the only Literary and Scientific Institution in the Island, the value of its Library cannot be over estimated. Travellers from several parts of Europe, to some of whom your Committee have lately afforded access, have thankfully acknowledged its worth. And to the Scholar and the Orientalist it affords a fund of knowledge which is elsewhere sought in vain.

In view of these considerations, therefore, your Committee recommend the purchase of all works having reference to Ceylon, with which the Library has not as yet been furnished; and also the acquisition of many Oriental works of undoubted interest and usefulness, among which may be

enumerated, several of Professor Wilson's publications, including his Sanscrit Dictionary, and Grammar, and the *Laleta Vestra*, the legendary Life of Budhu, now publishing in the Bibliotheca Indica at Calcutta.

The Society's Museum, the Committee regret to state, has, for some time past, from the want of a Curator, been greatly neglected. This want they hope to remedy, by the appointment to that office of a gentleman who has signified his willingness to discharge the duties of the appointment until the Society may be in a position to effect better arrangements. Considering how rich Ceylon is in natural productions, it is to be lamented that the funds of the Society will not allow of the appointment of a salaried Curator and Taxidermist.

The Committee see no reason why Ceylon should not, aided by Government, obtain a Museum, similar to those which now flourish in South Africa, and in the Presidencies of India. The report of the former has been forwarded to your Society, by order of His Excellency the Governor of the Cape, with a letter from Mr. Edgar Layard, the Curator, in which he expresses a hope that "the Society may be disposed to sanction a system of mutual exchange."

The Committee would, in conclusion, urge upon the Members individually the desirableness of increased efforts on behalf of the Society.

To the resident Members in Colombo they would recommend the resumption of the Evening Meetings, from which in times past much benefit was derived. In the language of a former Report, they "have a sensible influence on the prosperity of the Society, tending as they do, to the opening up of new subjects of enquiry, and generally imparting additional vigour to the efforts of its Members."

*Joint Secretaries* { F. W. Willisford.
J. Alwis.

TREASURER'S ACCOUNT.

| | £ | s. | d. | | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| 1856. | | | | 1856. | | | |
| Nov. and Decr., Receipts...... | 32 | 7 | 9 | Nov. and Dec., Disbursements | 8 | 14 | 9 |
| 1857. | | | | 1857. | | | |
| Jany. to Decr. Do. | 14 | 14 | 0 | Jany. to Decr. Do. | 17 | 1 | 8 |
| | | | | Balance in hand... ... ... .. .. | 21 | 5 | 5 |
| | £ 47 | 1 | 9 | | £ 47 | 1 | 9 |

C. A. Lorenz, *Treasurer.*

The Report having been adopted,—It was *resolved*, that Mr. Skeen be authorised to engage Compositors at the Society's cost to hasten forward the Journal.

The Secretary and Librarian were authorised to purchase any new works on Ceylon, and to submit any others for purchase to the Committee.

The following Gentlemen were then ballotted for, and declared elected as Members of this Society.

| | |
|---|---|
| J. Maitland, Esq. | *Proposed by J. Alwis, Esq.*<br>*Seconded by W. Skeen, Esq.* |
| J. H. Marsh, Esq. | *Proposed by J. Capper, Esq.*<br>*Seconded by the Rev. B. Boake.* |
| F. J. De Saram, Esq. | *Proposed by Dr. Willisford.*<br>*Seconded by Dr. F. Kelaart.* |
| C. Kriekenbeck, Esq. | *Proposed by Dr. Willisford.*<br>*Seconded by J. Alwis, Esq.* |
| R. F. Morgan, Esq. | *Proposed by J. Alwis, Esq.*<br>*Seconded by J. Capper, Esq.* |
| J. A. Dunuwille, Esq. | *Proposed by M. Coomarasamy, Esq.*<br>*Seconded by J. Alwis, Esq.* |
| E. Ormiston, Esq. | *Proposed by Dr. Willisford.*<br>*Seconded by J. Capper, Esq.* |

The Secretary laid on the table the letters from the Cape Society of Natural History, and the New Zealand and Batavian Society, and it was resolved that he be instructed to reply to them forthwith with copies of the Society's Journal.

The following Members were then proposed and elected as the Office bearers for the current year.

*Patron.*

His Excellency the Governor.

*Vice-Patrons.*

The Honorable Major General Lockyer.
The Honorable Sir C. J. MacCarthy, Colonial Secretary.
The Right Rev. The Lord Bishop of Colombo.
The Honorable Sir W. Carpenter Rowe, Chief Justice.

*President.*

The Rev. D. J. Gogerly.

*Vice-President.*

The Rev. B. Boake.

*Secretary.*

J. Capper, Esq.

*Assistant Secretary and Librarian.*

James Alwis, Esq.

*Treasurer.*

C. A. Lorenz, Esq.

*Curator.*

J. Maitland, Esq.

COMMITTEE.

C. P. Layard, Esq.
Dr. F. W. Willisford.
Geo. Lee, Esq.
M. Coomarasamy, Esq.
The Rev. B. Boake.
W. Skeen, Esq.
R. Dawson, Esq.
Captain Dudley.
J. H. Marsh, Esq.
L. de Zoysa, Esq.
L. Nell, Esq.

COMMITTEE OF PAPERS.

The Rev. D. J. Gogerly.
The Rev. B. Boake.
C. A. Lorenz, Esq.
Louis Nell, Esq.
L. de Zoysa, Esq.
James Alwis, Esq.
M. Coomarasamy, Esq.

Donations to the Library during the year 1857:

1. Smithsonian Contributions to Knowledge, vols. VII. and VIII.
2. Smithsonian Report for 1854.
3. Eighth Annual Report of the Smithsonian Institution.
4. Essay on the Architecture of the Hindus.
5. Bombay Asiatic Society's Journal for July 1857.
6. Same for October 1844.
7. Journal of the Royal Asiatic Society of Great Britain, No. XV. part 2.
8. Two Maps of Assyria and of ancient Nimroud.
9. Atlas of Geological Papers of Western India.
10. Geological Papers on Western India.
11. Constitution and Bye-laws of the New Orleans Academy of Sciences.
12. The Hand-book of Singhalese Conversation, presented by the Rev. C. Alwis.

Donations through the Government of Ceylon during 1857:

16 vols. Exhibitors' Prospectuses of Exhibition of 1851.
1 do. Catalogue of Paris Universal Exhibition of 1855.
1 do. Catalogue of Works on the Great Exhibition of 1851.
1 do. Jury Reports on the Exhibition of 1855.

First Report of the Commissioners for the Exhibition of 1851.
Third do. do. do.
Report of the Management of the British part of the Paris Exhibition.
Report of the Juries of the Madras Exhibition.
Official Descriptive Catalogue of do.
Report of the Madras Exhibition of Raw products.
Madras Exhibition Catalogue 1855.
Official Catalogue of the French Exhibition.
Report of the Cape Exhibition in 1855.
Report of the Committee thereon.
3 Certificates for Island of Ceylon, by the Paris Exhibition.
4 Medals—three Bronze and one Silver.

---

Transferred from
BRITISH MUSEUM NATURAL HISTORY
Zool. Dept

# JOURNAL

OF THE

# CEYLON BRANCH

OF THE

# ROYAL ASIATIC SOCIETY.

## 1856-58.

## VOL. III.—PART I.

No. 9. 2nd ed.

*EDITED BY THE HONORARY SECRETARY.*

"THE DESIGN OF THE SOCIETY IS TO INSTITUTE AND PROMOTE ENQUIRIES INTO THE HISTORY, RELIGION, LITERATURE, ARTS, AND SOCIAL CONDITION OF THE PRESENT AND FORMER INHABITANTS OF THE ISLAND, WITH ITS GEOLOGY, MINERALOGY, ITS CLIMATE AND METEOROLOGY, ITS BOTANY AND ZOOLOGY."

BRITISH MUSEUM NATURAL HISTORY

COLOMBO:
PRINTED AT THE "TIMES OF CEYLON" PRESS.

1883.

# JOURNAL

OF THE

# CEYLON BRANCH

OF THE

# ROYAL ASIATIC SOCIETY.

## 1856-58.


VOL. III.—PART I.

No. 9.


*EDITED BY THE HONORARY SECRETARY.*

"THE DESIGN OF THE SOCIETY IS TO INSTITUTE AND PROMOTE ENQUIRIES INTO THE HISTORY, RELIGION, LITERATURE, ARTS, AND SOCIAL CONDITION OF THE PRESENT AND FORMER INHABITANTS OF THE ISLAND, WITH ITS GEOLOGY, MINERALOGY, ITS CLIMATE AND METEOROLOGY, ITS BOTANY AND ZOOLOGY."


BRITISH MUSEUM NATURAL HISTORY.



COLOMBO:

PRINTED AT THE "TIMES OF CEYLON" PRESS.

1883.

# CONTENTS.


| | Page. |
|---|---|
| Entomological Papers, being chiefly Descriptions of Ceylon Coleoptera, with observations on their habits, &c.—By J. Nietner, Esq. ... ... ... ... | 1 |
| Description of new and little-known Species of Ceylon Nudibranchiate Molluscs, and Zoophytes.—By E. F. Kelaart, Esq., M.D. ... ... ... ... | 76 |
| Account of the Works of Irrigation constructed by King Parákrama Báhu, contained in the 68th and 79th Chapters of the Maháwaṉso, with Introductory Remarks.—By L. De Zoysa, Mudaliyár ... ... | 125 |
| Topographical and Statistical Account of the District of Nuwarakaláwiya.—By A. O. Brodie, Esq. ... | 136 |

# ROYAL ASIATIC SOCIETY.

## CEYLON BRANCH.

## ENTOMOLOGICAL PAPERS; BEING CHIEFLY DESCRIPTIONS OF NEW CEYLON COLEOPTERA,

WITH SUCH OBSERVATIONS ON THEIR HABITS, &C., AS APPEAR IN ANY WAY INTERESTING.

By J. Nietner, Esq.,

Member of the Society of Naturalists of Berlin, Entomological Society of Stettin, &c.,

### No. I.

*Introductory Note on the publication of New Species under disadvantages such as describing Entomologists necessarily labour under in countries remote from European centres of science.*

I little doubt that the following descriptions of new *Coleoptera* will meet with anything but approbation from the Entomological world at home. As, however, in spite of this anticipation of an ungracious reception, I do not for the present intend to desist from my purpose of publishing such descriptions, I may as well try to vindicate this measure by setting forth the reasons which induce me to consider the difficulties which beset the path of the entomological author in this country as not insurmountable.

The objections raised against me will be these:—considering the state Entomological literature is still in—that is to

say, considering that it has not, generally speaking, been condensed into a certain limited and obtainable number of volumes, as is the case in the higher branches of Zoology and Botany; that, on the contrary, the bulk of it consists of fragments which float without order in the misty and unfathomable ocean of scientific journals; it is next to impossible that an individual entomologist abroad should surround himself with this shapeless mass of learning, and keep himself, by this, or other means, so well informed of the details of the actual progress of the science, as not to be exposed to mistakes of one kind or another, but more specially to creating synonymy* in attempting to work independently. It will further be said against me, that not having the facilities and the wholesome check which arise from the diligent use of extensive and well-named collections, not even having the gratification of a brother entomologist's views and opinions on doubtful cases, it will be impossible even to determine whether an insect be new or not; and from these reasons (the *résumé* will be) entomologists abroad should confine themselves to collecting and observing the habits of the objects of their attention, but

---

* *Synonymy* is, and always will be, an unavoidable evil to which descriptive science is liable under *any* circumstances. My arguments are merely intended to uphold the possibility to reduce it to such a nature, and to limit it to so small an extent, as to be of little importance if weighed against the merits the publications in which it occurs may be possessed of in other respects, and, therefore, to be pardonable. In case, however, I should eventually ascertain that I am mistaken on this point, I shall then abandon my pursuits, or at all events, my present mode of following them up. I feel certain, that every enthusiastic naturalist, who has travelled in foreign parts, will support my cause, and understand and appreciate my striving to become the herald of my own discoveries.

I am well aware that there is more than one way to attain this end, and that the one I have selected is perhaps not the best; but circumstances have hitherto barred me from those upon which I might lay myself less open to censure. In a position like mine only, where they are my principal support, books are well tested; and whoever has tested them under such circumstances, will know that much of the synonymy created abroad, is referable to them, and *not* to the student.

they should never go to print with matters on which it is an impossibility for the ablest among them to be quite competent. These arguments are unfortunately too true, but still, I think, admit of being mitigated sufficiently to come to final conclusions less disheartening to the entomological student abroad than the above.

First of all, every entomologist gives preference to a certain order of insects—say *Coleoptera*—and in this even, in almost all cases, to one or two particular families. In studying for the publication of new species, under the disadvantages just mentioned, he will confine himself to this order, or perhaps family. Now, although as objected above, the information existing on this particular branch, is for the most part fragmentary, still there are certain families, on which it has received tangible shape, through condensation by old hands:—Burmeister's *Lamellicornia*, Dejean's *Carabidæ*, Erichson's *Staphylindæ*, Schoenherr's *Curculionidæ*, Boheman's *Cassidæ*, Westwood's *Paussidæ*, etc., as well as the latter author's general work on the families, and Lacordaire's on the general *Coleopterorum*, diligently consulted, go as guides a long way, and should, although some of them have by the rapid progress of the science grown rather antiquated, guard against a number of mistakes of a systematic nature.

As to whether a beetle be new or not, I admit that in forming an opinion on this question, the entomologist, situated as above, will have quite as much to be guided by a certain tact (not clearly definable, but understood by scientific men) than by anything else; and I am forced to concede that under any circumstances almost, it is totally impossible to arrive at an *indisputable certainty* either the one way or the other. This, however, excludes by no means the possibility of his forming an opinion with so much precision as to enable him to pronounce in the matter with a very *high degree of confidence and all probability* in his favour. In attempting to come to a decision on this difficult point, he will receive a first superficial idea, from careful reflection on certain accidental circumstances, such as size, scarcity, or other peculiarities of the insect in question.

This idea, whichever way it may incline, will then either gain or lose in strength by diligent reference to his library, until at length, with a certain amount of tact and judgment, he will arrive at a result which, under such circumstances, must carry much weight with it.

I shall illustrate this case by an example. If, for instance, after collecting five years in Ceylon generally, and in the Western Province more especially, I find at the latter place an insect—say the *Chlœnius pulcher* described below—for the first time—am I not entitled to consider it as very scarce? If on consulting my library I discover nothing which can possibly refer to it (finding that not a single *Chlœnius* is marked as occurring in Ceylon), are not the chances greatly in favour of its being an undescribed species? If, again, I collect beetles as small and inconspicuous as the *Trichopteryx* described below, and consider at the same time, that, although they are in certain localities of common occurrence, no professional Coleopterologist has ever collected them before me in this Island; if moreover, again, my library offers nothing that could possibly refer to them individually (there being hardly an Asiatic species mentioned),—am I not under these circumstances justified in considering them as undescribed? Decidedly. Circumstances like these would indeed be altogether conclusive, if there was not a chance of the beetle occurring in some neighbouring country, and its having thence found its way into the normal collections of Europe. The possibility of such being the case, enhances the difficulties of the case of course very materially; and I am forced to admit that the means of overcoming them are very unreliable. One deficiency, descriptions of new species furnished under these circumstances, will almost always have: namely, the comparison (so desirable, if not essential, in large genera) with another allied and known species, will be wanting; but this stands or falls with the system from which it is inseparable.

I think I have said enough to shew, that the disadvantages the entomologist encounters here, or in other places similarly situated, in *conscientiously* attempting to publish new species

may (his principal assistance being perseverance, a good library, and tact—entomological instinct I am almost tempted to call it)—I am far from saying *entirely*,—be overcome so far as to expose him, from *want* of resources in the execution of his plan, to *no more mistakes* then entomologists expose themselves to under more favourable circumstances from *neglecting* them.

But I am not satisfied with obtaining the simple grant of permission to describe on the spot a part of what he collects. I claim more for the entomologist abroad. I wish to show that he should naturally be expected, nay desired, to do so; for although he labours under distressing disadvantages in some respects, he happily enjoys a proportionate share of advantages in others. It is unsatisfactory in the extreme for an enthusiastic entomologist to be obliged to let his collections go out of his own hands,—see others reap the honors from them, which are to be reaped on such occasions,—or perhaps see as it were a gulf close over them, hear no more of them, and find himself forgotten. For what is a mere collector? Let him display as much industry as possible, he is hardly looked upon as an entomologist—certainly, as long as he is prevented from publishing anything, not as a scientific one. Now, if such a man merely desists from publishing the fruits of his researches from want of resources to assist him to go creditably through such a task,—if he suffers his collections to go out of his hands, because he is too true a lover of science not to see the credit in a great measure due to himself reaped rather by another than to hoard up his entomological treasures, a useless heap, eventually to be destroyed by moths and time—I say, that a man who acts upon principles like those, finds himself not seldom disheartened in the prosecution of his studies under difficulties such as I have set forth. If, however, as I have endeavoured to point out, these difficulties can be overcome to a very considerable extent, is anything more natural than that he should be the herald of his discoveries himself? Could anything be more unkind and ungenerous on the part of his scientific

brethren at home, than to oppose and discourage him by their disapprobation?

I might enlarge on this subject, which has been a sore one with me for a long time, to a great extent, but I think this is sufficient to direct the reader into the train of my ideas and to enable him to follow it up.

I hasten therefore to conclude. As mentioned above, the Tropical entomologist has a proportionate share of advantages to balance what falls to his lot of the contrary; one of these advantages which he has over his brethren at home is, that he has an opportunity of seeing and studying alive what can at home only be examined in state differing more or less from that of life. Therefore, if he is *enabled* and *expected* to describe new species, it is moreover *highly desirable* for the sake of the promulgation of *sound* information, that he should do so, that he should avail himself of this, his principal advantage, and describe, fresh from nature, as many of his favourites and their habits as possible; and discouraging him in such an undertaking on any of the above grounds would be discouraging the progress of science in general.

### 1. Chlænius pulcher. *N.*

C. elongatus, subconvexus, subglabratus, æneo-viridis, elytris obscurioribus, limbo pedibusque flavis, subtus piceus. Long. corp. $6\frac{3}{4}$ lin.

Caput oblongum nitidissimum, ante oculos 2-impressum. Mentum dente fortiter excavato. Antennæ art.3o. quarto sesqui longiore. Thorax obcordatus basi angustatus quadratus, latitudine antica quarta parte longior, parce punctulatus, antice lateribus deflexus, postice dorsoque planus, basi 2-impressus. Elytra striata, ad strias, præcipue apicem versus, subtillssime pilosa, flavo-marginata. Pedes flavi, spinulis castaneis. Abdomen flavo-marginatum.

Specimen singulum m. in ripis Mahæ-Oyæ fluvii prope Negombo cepi.

Distinguished by its elongate shape. The head is of a bright green colour with the labrum and the mandibles of a deep, and the antennæ and palpi of a light brown, the latter being darkened towards the end. The thorax is of the same colour as the head, reflecting a copper hue from the back, its anterior angles are obtuse, the basal ones being righte

elytra are of the same greenish copper colour but darker; they are impressed with longitudinal lines, which are bordered on each side by a row of minute hairs. They as well as the abdomen have yellowish margins.

### 2. Chlænius regulosus. *N.*

C. subconvexus, subglabratus, thorace occipiteque rugulosis cupreis, elytris nigro-viridibus, pedibus elytrorum limbo lunulisque apicalibus flavis, subtus piceus, abdomine apice margineque flavis. Long. corp. 6¼ lin.

Caput fronte 2-impressum subtilissime longitudinaliter rugulosum. Menti dens laciniis extus rotundatis. Thorax ovatus basi quadratus lateribus valde deflexus, postice obsolete 2-impressus, parce punctatus, subtiliter transversim rugulosus. Elytra striata, staiis apicem versus per paria coëunsibus, ad strias, pilosa, apice utrinque lunula flava signata. Pectus abdomenque picea, hoc, segmentis 2 ultimis, præcedento dimido margineque flavis.

Specimen unicum f. ubi præcedentem cepi.

The head finely longitudinal, the thorax transversely rugose; the latter with rounded and deflexed sides The mandibles are of deep brown, the palpi and antennæ of yellowish colour darkened towards the tip. The lobes of the mentum tooth are externally rounded. The elytra are marked by two subapical spots of yellowish colour and semilunar shape (the back of the lunulæ being turned towards the suture). The striæ verge near the apex by twos into each other. The abdomen is distinguished by having a yellow margin and apex.

### 3. Scarites minor. *N.*

S. elongatus, niger, nitidus, subtus nigro piceus, pedibus piceis, tarsis, antennis palpisque castaneis. Long corp. 5 lin. lat. 1½ lin.

Caput subquadratum, ante oculos 2-impressum. pone oculos irregulariter sulcatulum. Mandibulæ validæ inter medium et basin fortiter dilatatæ, obtuse dentatæ, dextera dente obtuso subapicali, supra subtusque longitudinaliter sulcatæ. Antennæ art. 1° sequentium trium., 2° tertii prope longitudine. Thorax oblongo-quadratus, angulis anterioribus obtusis, posterioribus oblique truncatis. Elytra thoracis capitisque prope longitudine, striata, ante medium ad striam 2m uni-apicem versus ad striam 3m 2-punctata, punctis piliferis, basi granulata,

angulis oblique-truncatis. Pedes anteriores tibiis apice extus 5 dentatis, dentibus 2 ultimis parvis, omnes tarsis subtus leviter excavatis.

In prov. occid. arenis humidis sub vegetab. putrescent. specimina nonnulla legi.

Scarce, but little distinguished excepting by its small size. The head is subquadrate, in front with two deep longitudinal impressions, behind the eyes finely sulcated. The labrum is of the usual shape, the eyes are not very prominent. The antennæ are of about the same length as the head; the first joint is about as long as the three following together; the second, which is generally longer than the third, is in this case of the same length, joints 1-4 are naked, 5-11 pilose, increasing towards the tip gradually in size and thickness, taking at the same time a subquadratic and depressed shape. The mandibles are strong, much dilated and dentated from before the middle to the base, the right one having additional subapical tooth. The maxillæ also are strong, but slightly bent at the apex, where they are also slightly excavated. The labial palpi have the last joint longer than third, elongated and elliptic. The thorax is oblong, with the basal angles obliquely truncated. The elytra are oval, striated, granulated at the base, and have, as has also the thorax, a narrow margin. The anterior tarsi are furnished externally with five teeth, the two last ones of which, however, are very small. The posterior legs are similarly provided, but the teeth are indistinct. The joints of the tarsi are slightly excavated below. The sides of the body below are rugose.

### 4. Clivina rugosifrons. *N.*

C ferruginea, capite, thorace abdomineque piceis. Long. corp. 4⅓ lin. lat 1⅓ lin.

Caput rugosum, inter oculos elevatum, elevatione plana antice profunde 1-impressa. Mentum lobis subtiliter sulcatis. Antennæ robustæ thoracis medium vix attingentes, art, ultimo elongato penultimo-, art. 2° tertio sesqui longiore. Thorax subquadratus antice parum angustatus, elytrorum latitudine, subtus parce punctatus, prosterno sulcato, Elytra striata, in striis punctata. Pedes tibiis anterioribus apice axtus 4 dentatis, subtus excavatis, reliquis fortiter spinosis, tarsis articulis margine apicali setoso.

In prov. occid. sub vegetab. putrescent. infrequentissime legi:

A large and distinguished species. The head is very rugose, the clypeus is contracted behind the apical angles, and then produced again into another pair of angles. The labrum is transverse, slightly sinuated in front, with the angles rounded and setose. The mentum is quadrate, the lobes rounded at the apex and slightly sulcated, the tooth is strong, of equal length with lobes, and of the typical spear-headed form. The ligula has the apical angle much elongated, terminating in a membranaceous bristle which is bifurcate at the tip. The maxillary palpi have the last joint elongate, cylindrico-conic: that of the labial ones is still more elongate, elliptic. The antennæ have the basal joints elongate, those towards the tip rounded. They and the legs are hairy, otherwise the insect is of a bright polished surface.

### 5. Clivina elongatula. *N.*

C. elongata, subdepressa, supra nigro-picea, subtus picea, pedibus elytrorumque margine castanies, antennis oreque dilutioribus. Long. corp. vix 3 lin. lat, $\frac{3}{4}$ lin.

Caput triangulare, subtiliter punctato-rugosum. Palpi articulo ultimo apice leviter truncato. Thorax oblonge quadratus, infra apicem leviter sinuosus, parce obsoleteque transversim strigosus. Elytra striata, in striis punctata, ad striam $3^m$ utrinque 4 punctata. Subtus parce punctata.

Ebi ræcedentem frequenter legi.

I have not dissected the labium of this species, which, however, is at once recognised by its depressed and, in proportion to its width, very long shape. The labrum, antennæ, and legs, are so much like those of the former, that they need no further description.

### 6. Clivina maculata. *N.*

C. picea, elytris ferrugineis infra medium macula nigra obsolet ornatis, pedibus intermed. et post. oreque brunneo-testaceis, pedibus ant. antennisque obscurioribus. Long corp. 2 lin.

Caput oblonge quadratum, rugosum, costis 5 magis minusve interruptis ad marginem anteriorem in dentes 4 productis munitum. Palpi art. ultimo basi intus incrassatto. Antennæ art. 2-3 subæqualibus. Thorax subquadratus leviter rotundatus. Elytra striata in striis profunde punctata.

Ubi præcedentes specimen singulum legi.

As distinguished as the preceding two species. The palpi and the mentum appear to me of a somewhat extraordinary form. The last joint of the former is considerably and more inflated at the base than in any other Ceylon species that has hitherto come under my notice, whilst the others are of a very curved appearance in both the maxillary and labial palpi. The insect is, however, easily distinguished by its general facies, which is rather like that of a *Dyschirius*; from which genus, however, the mentum alone is sufficient to separate it. I may as well remark here, that, although the Island is well supplied with *Scarites* and *Clivinas*, I have hitherto not discovered a single *Dyschirius*, a genus so well represented in Europe. Of the three *Clivinas*, just described, single specimens only have been in my possession for a considerable time. There are three or four more species met with about Colombo, but these being of common occurrence, I abstain from describing them here, as they may possibly be amongst those described by Putzeys or others from the Indian continent.

### 7. Œdichirus alatus. *N.*

Œ. alatus, setosus, nitidus, rufo-testaceus, thorace dilutiore, capite, elytris abdominisque segmentis 3 ultimis nigris; elytris apice 2 maculatis, maculis rufo-testaceis; pedibus flavis, femoribus apice tibiisque basi nigrescentibus; antennis palpisque maxill. basi obscuris, apice testaceis, reliquis oris partibus rufo-piceis. Long. corp $3\frac{1}{6}$ lin.

Œ. pæderino Er. similimus, præter colorum distributionem differt tamen *alis*, elytrorum antennarumque articuli ultimi sculptura. Antennæ art. ultimo penultimo aequali nisi paulo minore, apice fortiter *truncato* leviterque excavato. Thorax Œ. pæderini, dorso punctis biseriatim impressus, serie interna vel centrali elliptica punctis minoribus magis inter se approximatis, externa vel submarginali punctis magnis distantibus. Elytra oblonge subquadrata, infra medium rotundata, thorace *longiora* et duplo fere amplior (utrumque elytrum thoracis fere magnitudine), basi parte thoracis adjacente *duplo-*, infra medium illius latitudine antica plus tertia parte latiora. Os, pedes et abdomen Œ. pœderini.

Pœderorum more victitare videtur; in eorum societate in lacus Colombensis ripis infrequentissime legi; illis minus gracilis atque minus agilis.

I have not had an opportunity of examining specimens of either of the three *Œdichiri* hitherto described. However, I

have before me Erichson's figure and description of the Sicilian *Œ. pæderinus*, with which I find my species strongly to agree. It differs, however, from the former materially in the following three points, viz., the wings, the sculpture of the wing-covers, and the last antennal joint. The fact that this species has wings, would render an alteration in Erichson's diagnosis of the genus necessary, it being characterized therein as "apterous". The elytra are not so much contracted and rounded at the base, and, being longer than the thorax, have therefore a more oblong, subquadratic appearance. As in the above typical species, they are, however, rounded at the sides and broadset a little below the middle. They are about twice as broad at the base as the adjoining part of the thorax; and in their broadest part rather more than a third broader than the thorax in its. The third point, in which the two species differ, is the last joint of the antennæ, which, in this case, is strongly truncated at the tip and slightly excavated. They are further distinguished by the distribution of the colours, my species being of a dark yellowish red, thorax lighter, head, elytra and three last abdominal segments black, elytra with two reddish spots at the apex, legs yellowish, at the apex of the femora and base of the tibiæ blackish, the mouth is brown, the maxill. palpi yellowish with the three first joints dark at the base, the antennæ have the six basal joints dark excepting at the apex, where they, as well as the five remaining ones, are yellowish. In all other points I find the insect to agree entirely with the typical *Œ. pæderinus*: the palpi, legs, and anal segment of abdomen are of the same structure, the hairy vestiture is exactly the same in the different parts of the body of my species as it is in the corresponding ones of Erichson's.

---

## No. II.

### I. Anchista, *n. g.* *N.*
### Fam. Carabidæ.
### Trib. Lebiidæ.

Corpus depressum, ovatum. Caput magnum, oculis mediocribus, semiglobosis, prominulis. Mentum dente magno obtuso, lobis parum breviore, his extus rotundatis, apice acuminatis. Palpi robusti, maxillares art. ultimo magno ovato, apice obtuso, labiales art. ultimo valde securiformi. Ligula cornea apice obtuse acuminata, labrri marginem anteriorem attingens. (Paraglossæ mihi adhuc non dissectæ,) Labrum transversim quadratum. Mandibulæ simplices apice arcuatæ et ocuminatæ. Antennæ robustæ thoracis basin attingentes, art. 1° mediocri, 2° brevi, 3° quarto paulo longiore, 4-10 subæqualibus, 11° penultimo parum longiore. Thorax longitudine latior, angulis anticis rotundatis, medio obsolete angulatus, basi angustatus, quadratus. Elytra apice quadrate truncata. Pedes robusti tarsis art. 4° profnude bilobo, unguibus fortiter pectinatis.

### 8. Anchista modesta. *N.*

A brunneo-testacea, elytris, (maculis 2 obsoletis subhumeralibus exceptis) obscurioribus, oculis nigris, abdomine piceo. Long corp 4 lin.

Caput fronte medio leviter uniimpressa, Thorax profunde longitudinaliter canaliculatus, lateribus fortiter depressus. Elytra in regione media depressa apicem versus parum dilatata, striato-punctata, ad striam 2m punctis 2 majoribus subapicalibus, cum thorace marginata.

Specimen singulum m. prope Colombo nocte ad lumen cepi.

The characteristics of this new genus are those of the g. *Calleida*, excepting the ligula which in this case is obtusely acuminated, the last joint of the maxill. palpi which is obtuse at the apex, and the thorax, which is not as in *Calleida* longer than broad, but the reverse. From *Cymindis* it would differ principally in the deeply bilobed fourth tarsal joint, and in some other minor points, but it is difficult to say what the true characteristics of this genus are, if even Lacordaire uses the particle "ou" not less than five times in the diagnosis he gives of it in his g. d. Col. It would also appear to be allied to *Plochionus*, differing from this g., however, in the obtuse extremity of the terminal joint of the maxill. palpi, and the deeply bilobed fourth tarsal joint. However, if Lacordaire's diagnoses are exact, I feel justified in separating *Anchista* from all these genera. The name "*Anchista*",

has reference to the affinity of the insect to the two genera just mentioned, whilst the specific name "*modesta,*" refers to its inconspicuous colours. Amongst its peculiarities weight ought to be laid upon the plumpness of the palpi, in fact all other parts of the mouth and even the whole head, which was very striking to me.

Like many of my best *Carabidæ* I found this insect at night on the table, whither it had been attracted by the light. The anterior tarsi are dilated and furnished with hairy brushes below, longest at the apex of the lobes of the fourth joint.

### II. Elliotia. *n. g.* *N.*

### Fam. Carabidæ.

### Trib. Lebiidæ.

Corpus subconvexum, ovatum. Caput mediocre, oculis maximis. Mentum leviter transversim emarginatum, edentatum, lobis acuminatis. Ligula submembranacea apice truncata, paraglossis connatis marginem anteriorem parum superantibus, obtusis. Palpi elongati, art. ultimo elliptico, acuminato. Labrum magnum transversum, integrum, mandibulas fere obtegens. Mandibulæ validæ, edentatæ. Antennæ robustæ filiformes, humeros, superantes, art. 1° mediocri, 2° brevi, 3° quinti popre longitudine, 4° prœcedente breviore, 2-4 obconicis, 5-10 æqualibus, cylindricis, 11° præcedente tertiâ parte longiore, 4-11 pilosis. Thorax parvus, capite minor, transversus, longitudine duplo latior; antice leviter emarginatus, lateribus elevato-marginatus, ante medium lateribus rotundatus, medio fortiter angulatus, infra modium valde abrupteque angustatus, basi truncatus, subtus cylindricus. Scutellum leviter excavatum. Elytra ovata, marginata, apice sat fortiter truncata. Pedes omnes subæquales, simplices, tenues, tarsis cplindricis art. 3-4 magis minusve trigonis, unguibus simplicibus. Prosternum carinatum.

In honorem Dom. Hon. Walteri Ellioti (Maderaspatani), naturalistæ diligentissimi, meritissimi, nomen imposui.

### 9. Elliotia pallipes. *N.*

E. supra nigra, nitida, thorace scutelloque rufo-testaceis, labro elytrorumque limbo atque sutura brunneo-testaceis; subtus piceus, pectore rufo-testaceo, pedibus albidis, his geniculis oreque (palpis obscurioribus exceptis) testaceis. Long. corp. 2¼ lin.

Caput ad antennarum insertionem et inter oculos utrinque profunde impressum. Thorax basi rugosus, ante medium utrinque uni-impressus, linea media longitudinali divisus. Elytra punctato-striata, infra humeros leviter impressa.

In ripis lacus Colombensis sub veget. putrescent. mens. Jul. non infrequenter legi. Agilis est et avolare semper expeditus.

A pretty and very interesting little insect, about whose systematic position I am not quite satisfied; however, I provisionally place it towards the end of the true *Lebiidæ*. I find it most to agree with the descriptions of the g. *Pentagonica S. G.* and *Rhombodera R.*, with neither of which, however, it is identical. The head is distinguished by the large and prominent eyes, and four deep impressions, two larger ones at the root of the antennæ, two smaller ones between the eyes, also by a very distinct neck which connects it with the thorax; the labrum is large, transverse and entire, with the angles rounded off and the base narrowed; the mentum is but slightly transversely emarginated, edentate; the ligula is truncated at the tip, the paraglossæ adhere to it, reach a little beyond it, and are obtuse at the apex; the palpi are rather long with the last joint elliptic, acuminate; the antennæ are strong, filiform, and reach beyond the shoulders, joints 5-10 are of equal length and cylindric, 4-11 are pilose. The most remarkable part of the insect is, however, the thorax, which is of a subrhomboidal shape, transverse, smaller than the head, as broad again as long; it has two strong lateral angles at the middle, each furnished with a strong bristle, the anterior part has the sides rounded, the posterior abruptly obliquely contracted, at the base it is cylindric. As a specific distinction of the thorax, I mention, moreover, that in the present species it is impressed with two deep punctures before the middle and that it is rugose at the case. The abdomen is slightly peduncled. The scutellum is slightly excavated. The elytra are oval, rather convex and impressed with rows of punctures. The legs are simple and weak, apparently equal in both sexes. The anterior tarsi are little stouter than the rest, but not dilated nor furnished with any additional clothing below; the anterior tibiæ are deeply notched. As to the colour: the head and wing covers are black, the latter with the suture and margin of a light brown and highly polished, the thorax is reddish, and the legs are whitish. The insect

is very agile, and ever ready to take to its wings. It is of quite a peculiar appearance, imparted to it by its large eyes, small curiously shaped thorax and rather plump elytra and abdomen. I may further mention, that I have observed the fourth joint of the maxillary palpi to collapse when the specimens become quite dry, so as to give them a different, spoon-like appearance, apt to mislead any one who has not examined fresh specimens.

### 10. TRICHOPTERYX CURSITANS. *N.*

T. ovata, subconvexa, pubescens, supra obscure ænea, elytris æneo-brunneis, subtus picea, pedibus oreque testaceis, antennis art. 3-11 nigrescentibus. Long. corp 2/5 lin.

Antennarum clava art 2 primis ovatis, ultimo conico, acuminato. Thorax amplissimus, elytris tertiâ parte minor, convexus, angulis acutis, basi humeros amplectens, apice angustatus. Elytra subdepressa, subquadrata, apicem versus parum angustata, truncata, abdomine multo breviora Tibiæ medie incrassatæ. Coxæ posticæ maxime dilatatæ. Mesosternum carinatum.

Sub veget. putrescent. exsiccescentibus in prov. occid. copiosa.

A rather large species, commonly met with in this part of the Island, under rotting vegetable substances somewhat dried up. It is very agile and ready to take to its wings, which are of the beautiful typical construction, about twice the length of the body, and in dead specimens frequently produced behind. These insects vary a little as to shape, some being more narrowed behind than others, and also as to the exact number of the abdominal segments left uncovered by the elytra, generally three or four. The head is large, but exhibits nothing abnormal or extraordinary; the thorax is very large, emarginated in front and behind, with the angles acute, the basal ones enveloping the shoulders; the wing-covers are subquadratic, with the angles rounded off and a little narrowed behind; the legs have the tibiæ incrassated in the middle, and the posterior coxæ very much dilated and distant from each other; in all other respects they are typical. The shape of the body is that of an egg, broadest at the shoulders, gently narrowed towards the apex of the abdomen, and rounded off towards the head.

### 11. Trichopteryx immatura. *N.*

T. præcedenti similis, differt tamen colore supra æneo-testacea, subtus testacea, antennarum ast. 3-11 nigrescentibus; differt etiam corpore robustiore, magis quadrato, capite paulo majore, thorace minus convexo, parum ampliore, elytris abdomen totum vel fere totum obtegent. Pedes, antennæ etc. omnino præcedentis. Long. corp. $\frac{1}{3}$ lin.

In præcedentis societate specimina nonnulla legi.

Of somewhat the appearance of an immature individual of the former, but sufficiently distinct to be formed into a new species. The insect is altogether of a different appearance, imparted to it by the greater general plumpness of the body, the larger head, the less convex, but at the same time possibly still ampler, thorax, the altogether more quadratic shape, etc. The remark regarding the exact number of abdominal segments, left uncovered by the elytra, applies to this and all other species as well. The present one has generally the last two segments uncovered.

### 12. Trichopteryx invisibilis. *N.*

T. ovata, subdepressa, subparallela, pilosa, supra obscure ænea, subtus picea, pedibus, abdomine, antennis oreque testaceis. Long. corp. vix 1/5 lin.

Thorax amplus, elytris sesqui minor, convexus, angulis posticis humeros vix superantibus. Elytra oblonge quadrata, angulis rotundatis, subdepressa, truncata, abdomen totum vel fere totum obtegentia. Coxæ posticæ approximatæ. Tarsi typicis minus elongati, art. 3° præcedentibus haud multo longiore.

Cum *T. cursitante* victitat; frequenter legi.

A very pretty and very distinguished species. Its most striking peculiarity consists in the posterior coxæ, which are little distant from each other as those of the anterior legs, and almost touch each other, and also in the shortness of the tarsi. The head with the antennæ, the mesosternum, the tibiæ, which are incrassated in the middle, the posterior coxæ, with regard to the enlargement, are quite typical. However, the thorax and elytra differ again from those of *T. cursitans*, (which in every respect may be looked upon as the typical representative of the family in Ceylon, and which is here referred to as such) the former by the shortness of the posterior

angles, which can hardly be said to envelope the shoulders, the elytra, by being less or not at all narrowed behind, giving an oblong rather than an oval shape to the insect. Although in length only about one-half shorter, it is in bulk certainly one-fourth smaller than *T. cursitans*, and, although probably the smallest Ceylon beetle, it is distinguished at first sight.

### 13. Ptilium subquadratum. *N.*

P. subquadratum, subconvexum, pilosum, obscure æneo-testaceum, thorace dilutiore. Long. corp. ¼ lin.

Caput mediocre. Antennarum clava art. 1° inverte conico, 2° subcylindrico, ultimo elongato-ovato. Thorax convexus, angulis basalibus humeros fortissime amplectentibus, apicem versus valde rotundatus, apice leviter sinuatus. Elytra quadrata, abdomen non totum obtegentia. Scutellum parvum. Pedes robusti tibiis apicem versus incrassatis, tarsis art. 3° primi secundique longitudine, his subbilobis subtus penicillatis, coxis posticis simplicibus distantibus. Mesosternum non carinatum.

Ubi præcedentes sed infrequenter occurrit

The g *Ptilium* is the repository for all the anomalies of the family, its characteristics therefore are very vague; but if the absence of the mesosternal carina and the simplicity of the posterior coxæ are the determining features amongst them, the present species, in spite of a variety of anomalies it exhibits in other respects, belongs to it. The head is of middling size; the antennæ robust with the first joint of the club of the shape of an inverted cone, the second rather cylindrical, narrowed at the base, and the last elongate, ovate. The thorax is of very different structure from that of the foregoing species of the family, the basal angles being unusually far produced beyond the shoulders; towards the head it is strongly and rapidly rounded off, being thus altogether of a semi-circular shape; at the apex it is merely slightly sinuated, and the head is inserted rather below than in this sinuosity ; the whole thorax moreover is very convex, whilst the elytra are depressed. The wings vary from the typical form by being fringed with short simple cilia, instead of those long feathery appendages; they are moreover without a distinct peduncle, but still folded in the manner characteristic of the family. The legs are stout

with the tibiæ thickest at the tip; the third tarsal joint is of the length of the preceding two; the latter are somewhat bilobed and hairy below. The posterior coxæ are simple and distant. The mesosternum without a carina. The whole shape of the insect is quadratic rather than otherwise.

### 14. Ptenidium macrocephalum. *N.*

P. ellipticum, subconvexum, nitidum, sparsim pilosum, supra piceo-æneum, subtus piceum pebibus oreque testaceis. Long. corp. ¼ lin.

Caput maximum. Antennarum clava elongata articulis ellipticis. Thorax subquadratus antice posticeque angustatus, basi punctis 4 magnis profunde impressus. Elytra ovata, medium versus leviter inflata, apice obtuse acuminata, abdomine longiora et ampliora, punctulis lineis dispositis obsoletissimis impressa. Alæ corpore plus duplo longiores. Tibiæ fortiores spinulosæ. Tarsi breviores. Prosternum carinatum.

In præcedentium societate frequenter lectum.

This is perhaps the prettiest of the five species of the family just described, and at first sight recognised by the shape of its body and the polished back. The head is very large. The thorax is narrowed in front and behind, at the latter place impressed with four deep not to be overlooked punctures. The wing-covers are oval, a little inflated about the middle, rounded at the apex, and longer and wider than the abdomen. The prosternum is carinated.

It affords me much gratification to be enabled to publish representatives of three genera of this highly interesting and probably very extensive and widely-distributed family of pygmies, the South Asiatic representatives of which have hitherto been entirely unknown. I have no doubt that even this Island is the abode of a great many more species.

### 15. Stenus barbatus. *N.*

S. elongatus, æneo-niger, nitidus, punctatus, sparsim pubescens, pedibus palpisque albidis, ore coxisque testaceis, antennis brunnescentibus. Long. corp. 2½ lin.

Caput thorace tertiâ parte latius, fronte costis 3 abbreviatis, antice albido-pubescens. Antennæ art. 3° sequentium 2 fere longitudine, 3 ultimis elongatis, ellipticis. Palpi max. elongati apice densius pubescentes. Thorax cylindricus medeo leviter incrassatus, basi subquadratus.

Elytra thorace paulo longiora, sed fere duplo latiora, convexa, ovata. Abdomen immarginatum. Pedes elongati tenues, tibiis apice tarsisque fortiter setosis, his art. 4° profunde bilobo.

In lacus Colomb. ripis specimina nonulla legi.

This as well as the following species belongs to Erichson's division II. B. of the g., both having the abdomen immarginate and the fourth tarsal joint bilobed. Everything about this species is elongated. The head is about one-third broader than the thorax, the forehead is slightly excavated with two elevated ridges running from the root of the antennæ a short distance upwards, a third runs from the crown of the head down towards the centre of the two former, but all three reach only about the middle of the head. The part below the antennæ is covered with white hair. The antennæ have the third joint much elongated and the terminal club composed of elliptic joints. The thorax is rather slender, incrassated at the middle, gradually narrowed in front but nearly quadratic behind. The elytra are longer than the thorax, about double its breadth and oval, being slightly narrowed at the shoulders and the apex. The legs are long and slender, hairy at the apex of the tibiæ and the tarsi, the latter very much so on the inner side. The insect is of a metallic black color, highly polished; the legs, palpi and the first two antennal joints are whitish, the tibiæ and the apex of the palpi being, however rather darker, joints 3-11 of the antennæ are brownish, the coxæ and the mouth are yellowish, the tarsi have a brown spot at the apex of the first three joints, the claws are black. The insect is punctured all over, but the abdomen, the apical segments of which are indeed nearly smooth, less so than the rest of the body, and sparingly covered with small white hairs.

### 16. Stenus lacertoides. *N.*

S. robustus, nigro-æneus, dense profundeque punctatus, subtus sparsissime pubescens, pedibus palpisque testaceis femoribus apice nigrescentibus, antennis oreque castaneis. Long corp. $1\frac{1}{2}$ lin.

Caput thorace quartâ parte latius, fronte 2-costata. Antennæ robustæ art. 3° quarto paulo longiore, 9-10 globosis, 11° conico. Thorax cylindricus, medio fortius incrassatus, latitudine quartâ parte longior, margine

anteriore elevato, basi subquadratus. Elytra thorace longiora, convexa, humeris prominentibus. Abdomen immarginatum. Tarsi art. 4° profunde bilobo.

In prov. occid. stagnorum ripis rarius occurrit.

About this species everything is robust. It is well distinguished by the rounded club-joints of the antennæ, the elevated anterior margin of the thorax, the prominent shoulders, and its general shortness and plumpness. The forehead is rather more depressed or excavated than in the former, the two antennal ridges are shorter, the vertical one is altogether obsolete. The palpi are robust. The third antennal joint is about one third longer than the fourth. The thorax is shorter and plumper than in the former. The elytra are less oval, having the shoulders more prominent and only the apex rounded off or narrowed. The legs are similar to those of the former, but more robust, less hairy, and have the tarsi more cylindric. The insect is of a blackish metal color, the legs and palpi are yellowish, the tibiæ, however, the apex of the palpi, and also joints 1-2 of the antennæ rather darker; the femora are blackish towards the end, the mouth and joints 3-11 of the antennæ are chesnut, and the coxæ pitch-color. The animal is densely and deeply punctured all over, very sparingly covered with small greyish hairs, nearly obsolete on the back but more distinct below. It is less highly polished than the former.

### 17. Anthicus quisquiliarius.* *N.*

A. castaneus, capite, abdomine elytrisque piceis, his fascia media transversali interrupta maculisque 6 humeralibus niveis, parce pilosus. Long. corp. $1\frac{2}{3}$ lin.

Caput globosum, supra subtusque profundo punctatum, oculis parvis. Thorax nodoso-pyriformis, infra medium constrictus, parte anteriore crassiore lin. long. med. profunde divisa, subcordiformi. Elytra elliptica.

Sub veget. putrescent. victitat, prope Colombo rarius legi.

---

* *A formicarius,* of the first edition. I have changed the name, as I have since perceived that it has been already used by Laferté.

This insect looks uncommonly like an ant. It is easily distinguished from all other species of the Island, partly by this resemblance, partly by the sculpture of the thorax and the white fascia across the elytra. The antennæ are robust, thickened towards the tip, the three last joints forming a club. The legs have the femora very much incrassated, the tibiæ at the apex bicalcarate, and the tarsi, especially of the anterior pair, very hairy below, the fourth joint appears to be slightly cordiform. The white marks of the shoulders and the fascia across the wing-covers are composed of white hairs, the former are rather an interrupted row of these than true maculæ, the fascia consists of two halves, one in either elytron, reaching neither the external margin nor the suture. The insect is of slow motion.

### 18. Anthicus insulanus. *N.*

A. testaceus, abdomine obscuriore, capite thoraceque rufo-testaceis, elytris fasciis 2 nigris, parce pilosus. Long. corp. $1\frac{1}{4}$-$1\frac{1}{2}$ lin.

Caput globosum oculis mediocribus. Thorax pyriformis, cum capite supra punctata. Elytra ovata. Tarsi art. 4° bilobo

Prope Negombo in pratis sat copiosus.

In some of the specimens before me the anterior femora are furnished with a strong thorn inside, having at the same time the tibiæ of the same pair of legs slightly emarginated inside near the apex.

### 19. Meligethes Orientalis. *N.*

M. ovatus, subconvexus, pilosus, supra nigro-æneus, subtus piceus, pedibus, antennis palpisque maxill. dilutrioribus, tarsis palpisque labial. brunneo-aureis. Long. corp, 1-$1\frac{1}{2}$ lin.

Mentum transversum planum, punctatum, lobis apice depressis excavatis, glabris obtusis. Palpi lab. art. ultimo inflato, ovato; maxill art. ultimo apice angustato levissime truncato. Mandibulæ uni dentatœ. Thorax amplus angulis acutis, antice emarginatus, postice pluries sinuatus, subtus punctatus. Elytra ovato-quadrata, angulis 4 apicalibus rotundatis, pygidium haud obtegentia. Pedes validi, femoribus tibiisque incrassatis; anteriores tibiis apice intus unispinosis, tarsis art. 1-3 fortiter dilatatis, 1-2 subæqualibus transversis, profunde reniformibus, 3° minore, cordato, 4° minimo, subcylindrico; intermed. et post

tibiis extus spinulosis, tarsis anterioribus similibus sed art. 1-3 minus dilatatis, cordiformibus. Prosternum marginatum, punctatum, obtuse, acuminatum. Mesosternum antice carinatum.

Variat magnitudine et colore æneo-brunnea.

Prope Colombo in floribus per occasionem frequentissime legi.

Of the usual shape and color, but larger than usual,—varying, however, in this respect, some individuals being fully one-third smaller than others. Those small individuals, which occur in the proportion of about 2 to 20, are, moreover, nearly always of a brownish metal color instead of a blackish green. I have been unable to discover any other distinctions. This difference in size is no criterion as to the sex. The insect appears of local occurrence or attached to certain plants, which is nearly the same. I find them in abundance in the blossoms of *Convolvulaceous* and *Apocynaceous* plants in my garden, which is situated on the west bank of the lake. The species appears to differ from the typical *Meligethes* in the following points: the structure of the mentum, which I have sufficiently described above, the last joint of the lab. palpi, which in this case is not truncated, and the first of the antennæ, which is externally incrassated as in *Epuræa*. The antennæ are otherwise robust, the club is firm and hairy. The thorax is very ample, thinly ciliated along the upper part of the anterior margin, rather strongly below. The prosternum is largely developed, marginated, punctured and obtusely acuminated, overlapping the anterior part of the mesosternum which (the anterior part) is cylindric and carinated. Joints 1-3 of the tarsi are strongly penicillated below, the penicilla being composed of glanduliferous hairs of a fine golden color.

### 20. Georyssus gemma. *N.*

G. pygmæi staturâ et magnitudine, supra purpureo-æneus, iridescens, subtus piceus; *alatus*. Thorax subsemiorbicularis infra apicem constrictus, sulco med. long. divisus, lateribus, basi apiceque excavatus, impressionibus 3 majoribus dorsalibus, 2 minoribus lateralibus. Elytra fortissime costata, costis obtuse dentatis, in interstitiis transversim punctato-impressa, ad humeros profunde excavata, infra medium leviter sinuata. Tibiæ extus spinulosæ, intus sparsim ciliatæ.

Prope Negombo in ripis Mahæ-Oyæ fluvii non infrequenter et per occasionem nocti ad lumen cepi

Lacordaire and others characterize the g. *Georyssus* as having the elytra soldered together and being destitute of wings. *In the present species, however, the elytra are unconnected and cover wings proportionately larger than in any other beetle I can at present think of.* They are elongated and comparatively narrow, resembling in shape very much those of a *Libellula*, have a few veins at the base, and are ciliated at the margin. I have moreover occasionally taken this insect *flying* about the light at night. The sculpture of the thorax is complicated and difficult to describe. However, the leading features in it are these: a subapical sinuosity on either side; a longitudinal furrow; excavated sides, base and apex; three larger dorsal depressions (one central, two obliquely basal) and two smaller lateral ones at the subapical sinuosities—a short elevated ridge at the centre of the base separating the two basal impressions and being itself divided by the longitudinal furrow; two elevations separating the anterior part of the basal impressions from that of the central one (at the middle these three depressions are connected); two small rugosities near the anterior margin, one on either side of the longitudinal furrow.

The sculpture of the elytra is less complicated. They have a deep cavity at the shoulder, a large but not deep sinuosity below the middle, and are obtusely acuminated. The costæ of the back are 11 in number, the suture lying in the central one. The half of this central costa and the exterior margin form an elevated border round either elytron. The first and second on either side run towards the apex, but come to a stop (very abrupt in most, but less so in some specimens) before reaching it; the third, after having been interrupted near its base by the subhumeral cavity, runs on but does not reach as far as the former; the fourth does not leave the region of the shoulder; the last on either side is very prominent at the base, but soon forms an abrupt declivity and runs on as a low ridge to below the middle. The back of all these costæ is obtusely dentated. The interstices are marked with large, shallow,

transverse impressions. The head of the insect is rather large and even. The mandibles are furnished with an obtuse sub-apical tooth, the two lower thirds are ciliated. The maxillæ have the apex of the outer lobe externally enlarged, rounded off, and furnished with three strong teeth replaced by cilia on the inside; the inner lobe is conic and similarly provided with teeth and cilia, however, much thinner and finer. The maxill. palpi are robust, the last joint is inflated at the base. The antennal club is hairy, dark (whilst the remaining joints are yellowish), conic, and somewhat securiform, the sixth joint being inserted on one side of the seventh. The legs are robust, the tibiæ slightly curved, obliquely truncated at the end, furnished with spines along the outside, and with distant cilia along the inner.

### 21. Hydrochus lacustris. *N.*

H. elongatus, subdepressus, supra metallicus, iridescens, subtus piceus, pedibus, antennis, palpis elytrorumque margine magis minusve brunneis, mento cyaneo. Long. corp. 1-1½ lin.

Palpi maxill. robusti art. ultimo elliptico leviter inflate. Mandibulæ apice bifidæ. Antennarum clava dense pilosa. Thorax oblonge quadratus basin versus angustatns, basi medio productus, cum capite profunde punctata Elytra ad humeros oblique truncata, apicem versus sat fortiter angustata, profunde striato punctata. Tibiæ extus spinulosæ,

Specimina nonnulla in locu Colomb. legi.

The head is robust, broader than the thorax, the eyes large and prominent. The femora, the last joint of the maxill. palpi, the mandibles, and the tarsal joints are dark towards the apex.

### 22. Hydrous rufiventris. *N.*

H. ovatus, convexus, supra oleagino-niger, subtus obscure ferrugineus, pedibus dilute piceis, labro æneo, reliquis oris partibus cum clypeo testaceis. Long. corp. 9 lin.

Palpi maxill. articulis apicem versus abruptius incrassatis, art 3° quarto sesqui longiore. Antennæ art. 7-8 fortiter perfoliatis, ultimo acuminato. Caput antice utrinque punctulorum serie subsemicirculari et ad oculorum marginem interiorem impressum. Thorax punctulorum seriebus 4 lateralibus, 2 subapicalibus obliquis abbreviatis signatus. Elytra subtiliter striato-punctata. Tarsi omnes unguibus basi fortiter uni-dentatis. Carina prosternalis cultriformis.

Specimen singulum f. nocte ad lumen cepi.

As far as my resources allow me to ascertain, a very anomalous species, having the perfoliated antennæ and toothed claws of a *Hydrophilus* and the cultriform prosternal carina and the elytra of a *Hydrous*. I have placed it in the latter g. on account of the sharp edge of the prosternal carina, in which the great distinguishing character of this g. seems to lie, the same being deeply grooved in *Hydrophilus*. The insect attracts attention at once by the reddish color of its abdomen. It is of a blackish olive color on the back, having, however, the clypeus and the anterior margin of the labrum of a yellowish brown, the latter being otherwise of rather a metallic color. The remaining parts of the mouth are more or less yellowish. Joints 1-6 of the antennæ are yellowish too, with the exception of the second which is dark: joints 7-9 are blackish and pubescent. The legs are of a light pitch color. The lower part of the head is impressed with two rather semicircular series of punctures, similar punctures occurring along the internal margin of the eyes. The thorax is marked with six series of them and on the elytra they are arranged in lines. The sternal carina is well developed, the prosternal part has a sharp edge, whilst the mesosternal one is obtuse on the back, and the metasternal part depressed and slightly grooved.

### 23. Hydrous inconspicuus. *N.*

H. præcedente minus convexus, supra oleagino-niger, subtus rufo-piceus, ore testaceo. Long. corp. 4½ lin.

Palpi maxill. art. 2° et 4° subcylindricis, 3° apicem versus sensim incrassato, sequente tertiâ parte longiore. Antennæ art. 7-8 sub-globosis, 9° magno, ovato. Caput, thorax et elytra, ut in præcedente sculpta et signata.

In lacu Colomb. mens. Jun. non infrequenter cepi.

This is in every respect a normal species. The prosternal carina has a sharp edge, the claws are simple, the antennal club is composed of rounded joints, the elytra are of the typical structure, &c. In the latter respect as well as with regard to the various series of punctures upon head, thorax and elytra, it resembles the former; the punctures of the elytra are, however, less distinct. Joints 1-6 of the antennæ are yellowish,

the club being dark and finely pubescent. The maxill. palpi have joints 2 and 4 subcylindric, but the intermediate one thickened towards the tip.

I have not seldom in the month of June taken the pupæ of this species on the banks of the Colombo lake and hatched them at home. I found them about one inch under ground and often as far as 12 feet from the edge of the water, but still in muddy places. The imago is very active, perhaps more so than any other species of the g.

---

## No. III.

### *General Remarks on the* SCYDMÆNI.

In the first number of these Papers, I have described a winged species of *Œdichirus*, a g. supposed to be without organs of flight; in the second number I have given publicity to the more important discovery of wings in the single g. which forms the family of the *Georyssi*, also hitherto supposed to be apterous.

At present I am about to announce to some and to confirm to others the existence of these organs in the family of the *Scydmœnidœ,* a fact, although incomplete, of more importance than either of the former, considering the extent of the family and the difference of opinion, which appears to exist on the subject amongst the most eminent Entomological authorities. It is this importance which induces me to enter more fully on the subject.

I am not acquainted with the famous monograph of the family of the *Scydmœnidœ* by Dr. Schaum. From the manner, however, in which it is quoted by Lacordaire, in his g. *d. Col.* I should infer that these two celebrated authors agree in all the vital points. In Lacordaire's diagnosis of the family, these insects are described as having (with the exception of the American g. *Brathinus*, of which Lacordaire is not quite sure that it belongs to the family) the elytra soldered together, and being destitute of wings. Now, it is scarcely credible

that on a point so easily ascertained as this, any difference of opinion should exist; still, Westwood, in his "Modern Classification of Insects," in describing the same family, makes statements which imply the contrary. However, Lacordaire's description, being by 15 years,—more in fact,—the most recent, is, from this reason alone, entitled to be considered before all others; and, looking upon it in this light, that is, as the essence of all former observations, I shall, for the present, occupy myself with it alone.

According to this description, as mentioned above, the insects which it regards *have the elytra soldered together, and are destitute of wings.* This being the case, I was startled to find that, out of the thirteen species described below, nine or ten which I examined in this respect, had neither the elytra soldered, nor were they destitute of wings—*on the contrary the elytra were unconnected in the middle, and the wings were nearly double the size of the whole insect and could not possibly be overlooked.* I would willingly suppose that the 100 species of this family contained in European collections, and principally derived from Europe and North America, agreed with Lacordaire's description, and that the Ceylon species were exceptions to the general rule, had not Westwood's observation, alluded to above, corroborated my own, thus rendering me suspicious of some unaccountable mistake or oversight somewhere or other. That this mistake cannot consist in a slip of the pen, or a misprint in the g. *des Coléoptères* quoted above, is clear from the obvious care which has in every respect been bestowed upon this work, and from the same remarks being repeated in different words.

Where then this mistake is,—upon what ground it rests—it would, under my circumstances, be useless to attempt to unravel. However, it appears certain to me that some more detailed and positive remarks on the subject cannot be superfluous, and must be new to some entomologists.

Placing the fullest confidence, as every one would do without hesitation, in the infallibility of the description of the Belgian author, it was not likely that I should have looked for wings

at all in the *Scydmœnidœ* (a family to which I have not, until lately, paid much attention) had I not been struck by seeing the elytra of my *S. alatus* open, when handling it with a fine painter's brush in a drop of water, it being at the time quite out of the question that the opening could have been effected by pressure. On opening the elytra fully, I had no difficulty in discovering the wings.

Rendered extremely curious by this discovery—diametrically opposed to the distinct statement of so great an authority as the one just alluded to—I now examined other species, and all with the same result, most of them opening the elytra without my assistance, in the same manner as *S. alatus*; and I have not the slightest doubt that, when a sufficient number of specimens will enable me to examine the rest, it will still be with the same result.

That these insects use their organs of flight may be gathered from the following. At a former period, I lived in a house situated on a small eminence and overlooking extensive groves of cocoanut trees, cinnamon gardens, paddy fields, and patches of jungle. Here I collected large numbers of *Pselaphidœ*, especially *Euplectus*, in thin, scarcely visible, spider webs, with which the white walls of the house were covered in certain places—thus forming one large trap for anything small flying about. That these had been caught here when on the wing there can be no doubt; but I was much surprised to find with them (what is so common in more congenial localities, here also,) a considerable number of *Scydmœni*, especially my *S. advolans* and *pubescens*, as they were said by the most recent authority to be unable to fly, and the position they then found themselves in, was one they could not well, or could not possibly, have got into otherwise than by flying. From some reason or other, I am ashamed to say, I did not follow up the matter at the time; but I am now certain on the subject. Indeed, to remove all doubt and to settle all disputes, I have just been so fortunate as to take my *S. advolans* actually on the wing, flying in my garden in the evening at sunset.

Having gone so far, I will (in spite of some slight misgivings of being laughed at for telling an old story with so grave a face) add a few descriptive words about the organs in question. The wings of my *Scydmœni* are ample, about double the size of the whole insect, oblong, having the margin beautifully ciliated, and, with the exception of a few yellowish veins at the base, without any visible organs of this kind.

In spite of the difference in their shape, etc., I believe the species described below to be all genuine *Scydmœni* as restricted at present. Being, however, unacquainted with the sexual distinctions of these insects (which indeed I believe not to have been satisfactorily pointed out by any one, and to differ in different species), I should not be surprised if one or two of my species were eventually ascertained to have been separated upon these grounds alone. However, having been very reluctant in the admission of new species, it is just as likely that individuals may hereafter be found united in one which ought to be separated into two species. But I trust that neither may happen.

The species were all collected by myself in the immediate neighbourhood of Colombo. I have, however, no doubt that they occur all over the S. W. of the Island, which is of a uniform physical character, and perhaps occupy a still larger portion of it. Indeed, I have taken the *S. pselaphoides* in the hills, at an elevation of 3,500 feet, under the bark of trees. None of them are quite common; on the contrary, of nearly half of them I possess only one or two specimens. My *S. femoralis* I found under the soft, rotting bark of an *Erythrina Indica: S. Ceylanicus* and *ovatus*, I found dead in spiderwebs: *S. graminicola*, *glanduliferus* and *pyriformis*, I have hitherto exclusively taken in the sweeping net on the lawns of my garden about sunset: the other species I have met with indiscriminately in spiderwebs, under rotting vegetable substances, and in the grass.

After this preamble, which I trust may not be deemed quite superfluous, I now enter upon the description of my species, drawing previously attention to the *three* very natural and

very distinct groups which they form, and the characteristics of which will at once be perceptible from the headings given below.

With regard to the first group (A. i. spec. 24-28) I may mention that the elongated legs, largely developed posterior trochanters, and often distinct posterior coxæ, render the motions of the insects belonging to it staggering when walking, which together with their oblong, subdepressed body distinguishes them at a glance. I have subdivided them from the cultriform or grooved mesosternal carina.

The second group (A. ii. spec. 29-35) is equally well characterized as the former by the more robust, pyriform and subconvex body of the insects. *S. pselaphoides* in the former and *S. advolans* in the present group, form connecting links between the two; especially *S. pselaphoides*, which in general appearance rather belongs to the second, upon closer examination, however, is easily ascertained to be an anomalous member of the former.

From the rounded or narrowed occiput I have divided the second group into two subdivisions, giving preference to the distinctions to be drawn from this part of the body to those to be derived from the thorax, which from the variety of shapes it assumes would naturally suggest itself for that purpose; but the gradations between the principal forms appear to me too many, five, and therefore too indistinct to adopt them.

As to the third group (B. spec. 36) the insect which alone forms it amongst those described below, is so different from any of the others that is peculiarities must strike any one at first sight.

A,

*Species with a thick neck, abruptly formed and immersed in the thorax.*

i.

*Fourth joint of the maxill. palpi not acuminated; head subquadrato-ovate; eyes middling or small, finely granulated,*

*little or not at all prominent; antennæ subapproximate at the base; posterior trochanters elongated, incrassated at the apex; thorax obovate; body elongate, subdepressed.*

*(a.)*

*Mesosternal carina slight, simple.*

### 24. Scydmænus alatus. *N.*

S. dilute brunneus, pedibus antennisque dilutioribus, tarsis palpisque testaceis; pubescens. Long. corp. ⅔ lin.

Antennæ art. 1° apice bi-acuminato, 3-4 subæqualibus, 5 præcedente majore, 6 longitudine inter 4 et 5, ovato, 7-8 subæqualibus, 9 majore. 7-9 *apice angustatis, tubiformibus,* 10-11 ovatis, clavam formantibus, *vel* art. 9 globoso, 9-11 clavam formantibus. Palpi maxill. art. ultimo minimo apice truncato. Mandibulæ dente bifido munitæ, basi fortiter abrupteque dilatatæ. Thorax foveis basalibus nullis. Pedes elongati.

I include in this species individuals with a two, and others with a three, jointed antennal club. The latter are further distinguished by having a slight sinuosity in the rounded outline of the basal angles of the thorax: by having the posterior part of the metathorax and the base of the abdomen sensibly incrassated: and the head rather less quadratic than the former. However, the individuals thus distinguished being in all other respects exactly like those with the two-jointed club, I cannot help looking upon all these distinctions as sexual ones and uniting the insects in the same species.

The head from the eyes to the neck is of a transverse subquadratic form merging into the oval by the angles being rounded off; the anterior part is narrowed. And this is the typical sculpture of the skull in all the five species of this group. The eyes in the present species are middling. The antennæ are rather approximated at the base, and inserted in the centre of the front under a ridge which runs across it from eye to eye. The first joint is biacuminated at the apex: the fifth is longer than the adjoining ones: joints 7-9 in the individuals with the two-jointed and 7-8 in those with the three-jointed club, are of a peculiar construction, being narrowed at the apex and fitting into each other like the tubes of

a spyglass. The club joints are ovate, flat at the base; the last is large and obtusely acuminated. I consider the principal distinguishing character to lie in the remarkable structure of joints 7-9 of the antennæ. The maxill. palpi have joint 2 rather strongly incrassated at the apex, joint 3 obovate, narrowed at the base, joint 4 very minute, truncated at the apex. The mandibles are furnished with a bifid tooth and are strongly and abruptly dilated at the base. The thorax is of an obovate or obcardato-ovate form, being rather strongly rounded off before the middle and gradually narrowed below it; the usual basal impressions are wanting, the posterior margin has two slight sinuosities, the posterior angles are rounded off or obliquely truncated. Scutellum obsolete. Elytra furnished with a very short elevated ridge at the shoulder. Legs elongated; coxæ large, the two posterior ones rather distant from each other; two posterior trochanters much elongated, incrassated at the tip; apex of tibiæ subcylindric, but not narrowed, and hairy, especially in the 2nd pair; joints 2-3 of the tarsi of equal size, the first longer, the 4th a little shorter; two anterior tarsi slightly contracted, 2nd and 3rd pair more and more elongated. Penultimate segment of abdomen with strong longitudinal groove on the back.

### 25. Scydmænus femoralis. *N.*

S. staturâ et magnitudine præcedentis; testaceus. Antennæ art. 3-4 subæqualibus, 5 præcedente longiore, 6-6 gradatim minoribus, subglobosis, 7-8 apice fortius oblique truncatis, 9-11 gradatim majoribus, subglobosis, clavam formantibus. Palpi maxill. art. ultimo minimo semigloboso. Thorax magnus obovatus, basi rotundatus, 4 foveolatus. Elytra *apice truncata, 2-sinuata.* Pedes *femoribus 2 posticis medio constrictis.*

Of the general appearance of the former, but of a light yellowish colour, and well distinguished by the large thorax, truncated elytra, and abnormal construction of the 2 posterior femora. Antennæ with joints 7-8 rather strongly obliquely truncated at the apex, 9-11 forming a club, subglobose, flat at the base, the last acuminated and slightly cut away or even excavated on the inside of the apex. Last joint of

maxill. palpi semiglobose, these otherwise the same as in the former. Thorax and elytra of *S. alatus*, the former, however, larger, rounded at the posterior margin, and with four basal impressions, the later slightly truncated at the apex and with slight sinuosity in the truncature on either side of the suture. Scutellum very small. Legs with the tibiæ slightly bent at the base, the apex as in the former; tarsi with joints 1-4 gradually decreasing in size, first pair contracted and furnished with brushes on the inside. The two posterior legs inserted rather distant from each other, the basal part of abnormal construction; the trochanters much elongated and incrassated at the tip, whilst the femora at the place of the juncture rather abruptly narrowed, bent, and slightly compressed,—they being, at the same time, thinner than the adjoining apex of the trochanter; the constriction very striking.

### 26. Scydmænus Ceylanicus. *N.*

S. alati colore, sed major et magis depressus; long. corp. $\frac{3}{4}$ lin. Caput magnum, robustum, thoracis latitudine. Antennæ basi non approximatæ, art. 3-4 et 5-7 inter se subæqualibus, *arcum formantibus*, 8-10 gradatim majoribus, subglobosis, depressis apice oblique truncatis, 11° magno, conico, 8-11 longius pilosis, clavam formantibus. Palpi maxill. art. 4° minimo, semigloboso. Thorax ovatus, foveis basalibus nullis. Elytra apice singulatim rotundata. Pedes validi tarsis 2 ant. art. 1° *subtus in spinam sat fortem producto*

An anomalous species, especially with regard to the antennæ which are much less approximated at the base than those of the rest of the species belonging to this group, and with regard to the two posterior coxæ, which, on the contrary, are more approximated than in any of the species just referred to. The insect is of the light brown color of the two former, but larger and more depressed. The head is strikingly large and heavy, of the width of the thorax, in its hind part, which is strongly transverse, the oval form is prevailing over that of the square. Eyes small. Antennæ inserted under two strong protuberances rather than under a ridge, their club four jointed, joints 3-7 forming an inwards-bent section of a circle, joints 8-10

strongly compressed, obliquely truncated (subperfoliated), 11 large, conic. The 3rd joint of the maxill. palpi is of an oblongo-ovato shape, the external basal angle is prolonged into a small peduncle inserted in the apex of the 2nd joint, the 4th joint, (about the semiglobose shape of which I am not quite satisfied), appears to be obliquely inserted in the tip of the preceding. Thorax oval, of a similar shape to that of the former, anterior margin slightly emarginated. Scutellum obsolete. Elytra with the traces of a humeral costa, separately rounded off at the apex. Legs strong, 2 posterior coxæ not more distant from each other than the 4 anterior ones; tibiæ elongated, bent at the base and apex, at the latter place slightly narrowed, subcylindric and hairy; tarsi with joints 1-4 subequal, in the first pair strongly contracted, joint 1 of this pair produced in a spine on the inside.

(*b*)

*Mesosternal carina middling, grooved.*

### 27. Scydmænus intermedius. *N.*

S. alati statura sed major et robustior, colore obscuriore; long. corp. $\frac{3}{4}$ lin.

Antenæ art. 1° apice bi-acuminato, 2 et 5, 3 et 4, 7 et 8 inter se subæqualibus, 6 quarto paulo minore, obovato, 7-8 subglobosis apice oblique truncatis, 9-11 gradatim majoribus, obovatis, clavam formantibus, 11 acuminato. Palpi maxill. art. 3° obovato, 4° minimo semi-globoso. Thorax subrotundatus, basi 4-foveolatus. Elytra apice singulatim rotundata. Mesosternum sat fortiter carinatum *carina dorso deplanata canaliculata, apice acuminata.*

This species stands in the middle between S. *alatus* and *pselaphoides*. To the former it is allied by its general appearance rather than by anything else, differing from it very much in the structure of the antennæ and the mesosternal carina. To the latter on the contrary it is allied by similarity in the structure of the said carina, differing, however, from it in general appearance. The color is that of S. *alatus*, but a shade or two darker, the insect being at the same time larger and altogether more robust. The eyes are small. Antennal

club three-jointed, the joints forming it gradually increasing in size, obovate, flat at the base, the last acuminated. Scutellum obsolete. Elytra with two slight basal impressions, the trace of a humeral costa, separately rounded off at the apex. Legs elongated as usual; two posterior coxæ distant, tibiæ straight, subcylindric, but not narrowed at the apex, the four anterior ones hairy; tarsi with joints 1-4 almost inperceptibly decreasing in size—or perhaps 2-3 equal,—the anterior ones slightly contracted: these and the intermediate ones hairy on the inside. Mesosternal carina middling, flat on the back with a shallow but very distinct longitudinal groove or excavation, anterior part projecting, acuminated.

28. SCYDMÆNUS PSELAPHOIDES. *N.*

S. subpyriformi-ovatus, subconvexus, magis minusve brunneus, pedibus antennisque subtestaceis, femoribus apice nigrescentibus, tarsis palpisque testaceis; flavo-pubscens; long. $1\frac{1}{4}$ lin.

Antennæ art. 1° mediocri, apice biacuminato, 2-4 sensim minoribus, 5 et 2, et 3, 7 et 10 inter se subæqualibus, 9-11 clavam formantibus, 6-11 basi transversim, 6-8 apice oblique truncatis, 7-8 compressis. 9-11 obovatis. Mandibulæ dente bifido munitæ, basi dilatatæ et ciliatæ. Palpi maxill. art. 3° inverte conico, 4° minimo apice truncato. Thorax obovatus, latitudine quartâ parte longiore, basi 4 foveolatus. Elytra apice singulatim rotundata. Mesosternum præcedentis.

An anomalous species with regard to its general appearance which differs considerably from that of the rest of the group, and makes it, as I have remarked above, the connecting link between this and the following group. This is the largest species I have hitherto met with. The system of coloration is the usual one: more or less deep brown, legs and antennæ lighter, tarsi and palpi quite so. Eyes middling. Antennæ with a three-jointed club, the joints 6-8 are slightly truncated at the apex, 7 and 8 being at the same time strongly compressed have a subperfoliated appearance. The mandibles are furnished with a bifid tooth. The 3rd joint of the maxill. palpi is of the shape of an inverted cone, the 4th minute and truncated at the apex. The thorax is of an obovate form, about one quarter longer than broad, rounded off before and gradually narrowed below the middle, subquadratic at the base, impres-

sed with four foveæ or pits, the posterior angles rounded off. Scutellum minute Elytra with two short humeral costæ, separately rounded off at the apex. Legs stout; two posterior coxæ distant; tibiæ slightly bent at the base, subcylindric at the apex, the four anterior ones hairy; tarsi with joints 1-4 gradually decreasing in size, the anterior ones dilated, the joints transversely triangular, the intermediate pair hairy on the inside. Mesosternum of the preceding. Metasternum with a slight longitudinal depression down the middle. Penultimate abdominal segment grooved on the back as in *S. alatus*. In the enlargement of the anterior tarsi lies, as in the other beetles, undoubtedly a sexual distinction, as it is not equally strong in all individuals.

I may mention heie that upon some of the inviduals I found ticks (some g. allied to *Ixodes* but not a *Gamasus*) fastened, one of them having made a wound such as, supposing it to be inflicted at a corresponding place and on a proportionate scale, few animals of a higher order, would, I think, have survived. Still this little beetle appeared perfectly at its ease. The parasite alluded to had fastened itself right in the centre of the forehead, and the wound it had inflicted in this,—one would imagine most dangerous place,—was a deep hole or pit with a callous border. The latter led me to infer that the injury was an old one, and the tick being at the time fastened in it (and this so firmly that I had some difficulty in detaching it), I felt sure it had been in this position for months. The injury was observable under a slight magnifier, and I think to compare it to one inflicted by a rifle-bali would be greatly underrating its importance.

ii.

*Fourth joint of the maxill. palpi acuminated; mesosternal carina strongly developed; eyes large, prominent, coarsely granulated; antennæ distant at the base; 2 posterior trochanters simple; thorax variable; body robust, pyriform, sub-convex.*

(*a*)

*Occiput rounded.*

### 30. Scydmnæus advolans. *N.*

S. long. corp. ¾ lin. Antennæ art. 3 et 4, 5 et 6 inter se subæqualibus, obovatis, 7 majore, subgloboso, 8-10 subglobosis, basi transversim, apice oblique truncatis cum 11° conico clavam formantibus. Palpi maxill. art. 3° elongato, inverte conico, 4° mediocri. Mandibulæ tenues, medio acuminate 1-dentatæ, basi abrupte dilatatæ. Thorax ovato-rotundatus, apice fortius angustatus, basi leviter 2-sinuatus, 5-foveolatus. Elytra apice singulatim rotundata.

The insect is of brown color, the antennæ lighter, the legs still more, and the tarsi and palpi quite so, the femora are dark towards the apex, the head, thorax and suture are occasionally of chestnut color. It is, as usual, pubescent. The sculpture of the head in this and the following species not, as in the preceding, based upon the oblong square or the oval, but rather upon the form of a ball, which, in a more or less compressed state, is always perceptible; in some instances it is narrowed on one side. In the present species the head is heavy and subglobose. The eyes are large, prominent and coarsely granulated. The antennæ are inserted distant from each other under two protuberances of the anterior part of the forehead. The club is 4-jointed, the joints composing it being flat at the base, and, with the exception of the last, obliquely cut away at the apex, the last itself being conic. The maxill. palpi have joint 3 rather elongated and of the form of an inverted cone, joint 4 middling, acuminated. The thorax is of a rounded oval shape and rather strongly narrowed towards the apex. The scutellum is obsolete. The elytra have the usual rudimentary costæ at the shoulders and are separately rounded off at the apex. The legs are middling, 2 posterior coxæ inserted close together, trochanters all simple, tibiæ slightly bent at the base, narrowed and subcylindric at the tip, the 4 anterior ones hairy, tarsi with joints 2-3 subequal, the first a little longer and the 4th shorter, the two anterior ones slightly contracted.

I include in this species some individuals which slightly differ from the foregoing description, being more robust, covered more densely and with longer hair, especially on the

occiput and thorax, with the latter rather obconico-ovate and the costæ of the elytra more distant, and moreover occasionally of a chestnut color.

### 30. Scydmænus pubescens. *N.*

S. præcedente gracilior; long. corp. ⅔ lin. Antennæ art. 3 et 4, 5 et 6 inter se subæqualibus subcylindricis, 7° secundo paulo minore, *fortiter cylindrico*, 8-10 subglobosis cum 11° conico clavam formantibus. Palpi maxill. art. 3° inverte conico, 4° minuto. Mandibulæ tenues, medio obtuse obsoleteque uni-dentatæ, basi abrupte dilatatæ. Thorax conicus, latitudine haud longior basi 4-foveolatus. Elytra et pedes præcedentis, tibiis tamen apice leviter arcuatis.

Less robust than the former, and further distinguished from it by the 7th antennal joint, (the one preceding the club) which is of a strongly cylindric shape, by the minuteness of the last joint of the maxillary palpi, the obtuse and nearly obsolete tooth of the mandibles, the short-conical form of the thorax, and the tibiæ which are slightly bent at the apex.

### 31. Scydmænus pygmæus. *N.*

S. staturâ et colore præcedentis sed longius pubescens et sesqui minor; iong. corp. ½ lin. Antennæ art. 4 et 4, 5 et 6 inter se subæqualibus, 7° majore, ovato, 8-10 subglobosis, fortius compressis 11° clavam formantibus, hoc magno, obconico, apice obtuso. Palpi maxill. art. 2° tenuiore, 3° inverte conico, 4° minuto. Mandibulæ obsolete uni-dentatæ Thorax conicus latitudine parum longior, elytris fortiter applicatus, basi 2-sinuatus et 4-foveolatus. Pedes et elytra præcedentis, his tamen amplioribus.

Strongly allied to the two preceding species, still very much smaller, more compact and covered with longer hair—thus of rather a different appearance regardless of its size. From *S. pubescens* this species would principally differ in the shape of the 7th antennal joint, also in that of the first three club joints which are much more compressed and more hairy in *S. pigmæus.* The thorax of the latter is more firmly applied to the base of the elytra; the latter have a fuller, more robust appearance about them; the palpi are more slender, and the tooth of the mandibles is pointed. From *S. advolans* it would prin-

cipally differ besides in the generalities mentioned above, in the shape of the thorax, and in some of the points in which it differs from *S. pubescens.*

(*b*)

*Occiput narrowed.*

32. SCYDMÆNUS GLANDULIFERUS. *N.*

S. robustus; long. corp. $\frac{3}{4}$ lin. Antennæ art. 3-7 sensim majoribus, 8-10 globosis, fortiter compressis cum 11° *glanduliformi* clavam formantibus, longe ciliatis. Palpi max. art. 2° tenuiore, 3° inverte conico, 4° mediocri. Thorax conicus latitudine basali haud longior, elytris fortiter applicatus, basi 2-impressus, in impressionibus 2-foveolatus.

Of the size of *S. advolans* and the plump shape and color of *S. pygmæus*, the latter being rather lighter than that of *S. advolons*; it has the longer (especially on the occiput and thorax) hairy vesture of the former. The occiput is slightly narrowed behind. The antennal club is composed of four joints, the first three of which are strongly compressed, the 4th being plump and of the shape of an acorn with its cup; all are strongly ciliated. The thorax is conic, firmly applied to the base of the elytra, as in the preceding species, depressed, and with two pits at the base posterior margin with two sinuosities. The shoulder ridges of the elytra are short, but rather strongly marked. The tibiæ are narrowed, sub-cylindric and hairy at the apex. Joints 2-3 of the tarsi are subequal, the anterior pair more, the intermediate less, contracted.

33. SCYDMÆNUS GRAMINICOLA *N.*

S. gracilior; long. corp. $\frac{3}{4}$ lin. Antennæ art. 3 et 4, 6 et 7, 9 et 10 inter se subæqualibus, 5° adjacentibus paulo longiore, 3-7 subcylindricis, 8 subgloboso, 9-10 fortiter globosis cum 11° clavam formantibus. Palpi maxill. art. 3° inverte conico, 4° mediocri. Mandibulæ apice arcuatæ, medio acuminate 1-dentatæ, basin versus *sensim dilatatæ.* Thorax obconicus basi depressus, 2-sinuatus et 2 foveolatus, rectangulatus. Pedes *tibiis elongatis* basi apiceque arcuatis.

Of the usual brown color, legs and antennæ lighter, tarsi and palpi quite so, femora nigrescent at the apex, hairs of occiput and thorax rather long. The former slightly narrowed

behind, the head thus of a somewhat rhomboid form. Antennal club composed of three joints, the first two of which are strongly globose, the last being acuminated and slightly cut away on one side at the apex. The mandibles are furnished with an acuminated tooth at the middle, bent at the apex, and, what is rather uncommon in this g., gradually enlarged towards the base. The thorax is obconic, rather longer than broad. The elytra are somewhat more stretched than usual in this group, the rudimentary humeral costæ are rather prominent, they are separately rounded off at the apex. Tibiæ, more or less elongated, slightly bent at the base and apex, at the latter place sub-cylindric and hairy. Tarsi with joints 2-3 subequal, first pair slightly contracted. A sexual distinction appears to be expressed in the length of the tibiæ, which are less elongated in certain individuals, which are at the same time less robust than the others. The insect is easily distinguished by its general appearance.

### 34. Scydmænus pyriformis. *N.*

S. supra castaneus, subtus brunneo-testaceus, pedibus antennisque dilutioribus, tarsis palpisque flavo-testaceis, antennarum clava nigricante long. corp. $\frac{1}{2}$ lin.

Antennæ art. 3-8 fere subæqualibus excepto 5° parum longiore, 8° subgloboso, minore, 9-10 subglobosis majoribus cum 11° acuminato clavam formantibus. Palpi maxill. art. 3° inverte conico, 4° minuto. Pedes coxis 2 posticis distantioribus; tibiis 2 anterioribus basi apiceque leviter arcuatis, reliquis subsimplicibus.

A pretty little species, at once distinguished by its color, which is chestnut, darker at the base and suture of the elytra, and light, more or less brownish or yellowish below, the antennæ being of the latter color with a nigrescent club. The occiput is slightly narrowed, the head altogether plump, heavy and transverse. The antennal club is composed of 3 subglobose joints the last of which is acuminated and slightly cut away on one side as in some of the preceding species. The thorax is obovate, broadest below the middle and gradually narrowed towards the apex. The elytra have the usual two shoulder-ridges and are rather strongly dehiscent at the

apex. The two posterior coxæ are rather distant at the base; the tibiæ are slightly angustated and subcylindric at the apex, the four anterior ones hairy, the first pair, moreover, slightly bent at the base and apex, but the rest nearly straight

### 35. Scydmænus angusticeps. *N.*

S. castaneus, antennis pedibusque dilutioribus, tarsis palpisque testaceis; long. corp. 1 lin.

Caput magnum occipite *fortiter angustato*, subtrigono, hoc cum thorace longe pilosis. Antennæ art. 3 et 4, 5 et 6 inter se subæqualibus, 7-11 gradatim majoribus, vel 9-10 subæqualibus, subglobosis, 8-10 leviter depressis cum 11° clavam formantibus. Palpi maxill. art. 2° tenuiore, 3° inverte conico, 4° mediocri conico-acuminato. Thorax obconicus, basi subquadratus, 2-sinuatus et 4-foveolatus. Elytra costis 2 fortioribus abbreviatis. Tibiæ subrectæ.

A handsome species of more or less deep chestnut color with lighter legs and antennæ. The head is large, heavy, and from the eyes to the neck strongly triangular; the occiput and thorax are covered with long hair, which adds much to the peculiar appearance of the insect. The antennæ are thick and robust, the club four-jointed. The thorax is subquadratic at the base up to the middle and conic towards the apex. The punctures or pits at the base are four in number. The scutellum is small. The humeral costæ are stronger developed than in any of the other species, and traceable to the middle of the elytra. The tibiæ are nearly straight: subcylindric at the apex: the four anterior ones hairy. The tarsi have joints 2-4 nearly subequal.

*B.*

*Species without a neck.*

### 36. Scydmænus ovatus. *N.*

S. *ovatus*, convexus, brunneus; long. corp. ½ lin.

Caput subquadrato-ovatum. Antennæ art. 3-11 sensim incrassatis, 9-11 subglobosis, depressis cum 11° magno, conico clavam formantibus. Palpi maxill. art. 4° minuto acuminato. Thorax *amplius semiorbicularis*, margine posteriore medio producto, basi 2-foveolatus.

The color of this insect is, as usual, shaded off from brown to light yellow. However, in other respects it differs materially

from all the preceding species. The body is regularly oval, thorax and elytra convex, pubescent. The head is subquadratic-ovate the eyes rather small but prominent, the neck is altogether wanting. The antennæ are at the base as distant from each other as they can be, being inserted below the eyes; the club is three-jointed; the joints increase gradually in size from the third to the eleventh. The maxill. palpi have the second joint slender, the third rather pear-shaped, the fourth minute and acuminated. The thorax is very ample, semiorbicular, of the shape and nearly the size of the apical half of the elytra, the basal angles are acuminated and slightly envelope the shoulders, the posterior margin is prolonged in the middle, towards the scutellum the foveæ or basal impressions are two, and rather distant from each other. Scutellum obsolete. Elytra with two depressions at the base. Tibiæ straight; tarsi with joints 1-4 subequal or very nearly so. Mesosternal carina middling.

---

## No. IV.

### Cyclosomus flexuosus. *Fab.* *

To judge from what Lacordaire says of this g. in his *g. des Col.*—a work upon which, as I have said elsewhere, I look as containing the essence of all former researches—it would appear that the present species differs very materially from the three others hitherto described, namely, in the flatness of the antennal joints, in the serrated edges of the tibial spurs, in the existence of the tarsal brushes in the male, and

---

* This insect was erroneously described by me in the first edition of these Papers. However, I retain part of my description, as it notices some peculiarities of the insect, of which I find no mention made in any of the works within my reach. It was owing to these peculiarities, and Lacordaire's statement that the three known species were of yellowish and green colour, as well as to having no detailed description of the *C. flex.*, that I described it as new.

in the color—to say nothing of some other minor distinctions. The first three of these peculiarities—too important not to have been noticed by Lacordaire or any other describer of the g. had they been aware of them—add considerably to the characteristics which already constitute this g. one of the most remarkable of the extensive family of the *Carabidæ.*

The antennæ are strong, stiff and short, reaching hardly beyond the base of the thorax: joint 1 is of middling size, 2 short, 3-4 are subequal, 5 rather shorter, 6-11 still shorter, subequal: joints 3-11 *are strongly compressed and pubescent, but only on the narrow side.* The tibiæ are strongly bi-calcarated at the apex, the inner spur being longer than the outer one. In all legs these spurs are slightly compressed and serrated along the two narrow sides. Joints 1-4 of the anterior male tarsi, are slightly dilated, the apex of the first, second, and third, being at the same time furnished each with *two small white brushes*, below fenced in by spines. In the intermed. tarsi of the male, the apical half of joint 1, and joints 2 and 3, are furnished on the inner side with strong brushes of reddish colour, bordered by rows of spines, *the entire lower surface forming one thick brush,* and not two, as in the anterior pair.

Regarding the habits of these insects, one would feel inclined to suspect them to be of a semi-aquatic nature, that is, the insects to frequent the banks of rivers, or other damp places; and I know that some entomologists are under the impression, that their mode of living is that of the g. *Omophron.* However, in my experience, the direct contrary is the case. *They live in the driest, hottest, and sandiest places that can be found, where they burrow in the sand, exactly in the manner of the well-known g. of the Amaras.* I have of late taken considerable numbers of them in the Cinnamon Gardens of Colombo, in holes made by the rooting up of weeds, into which they had run, and could not escape, the loose sand giving under them whenever they attempted to do so. When wishing to find them, I had to search the corners of these holes, where some leaves had usually collected, when I would sometimes

dig up eight at a time, not seldom rather deep in the sand. They are quick of motion, and being thus pursued, immediately bury themselves in the sand.

The diagnosis as given by Lacordaire requires at all events to be entirely recast, and the g. to be removed from the tribe *Cratoceridæ*, (one of the characteristics of which is the want of foot-brushes in the male) in which he has placed it.

### III. OCHTHEPHILUS, *n. g.* *N.*
### Fam. CARABIDÆ.
### Trib. PAGONIDÆ.

Corpus oblongum, subparallelum, valde depressum. Caput magnum antice trigonum; oculis magnis, ovatis, prominulis; collo forti Mentum subquadrate emarginatum, lobis extus fortiter rotundatis, apice abrupte acuminatis, dente parvo acuminato. Ligula parva apice quadrate truncata, libera, paraglossis setiformibus marginem anteriorem longe sperantibus. Palpi robusti art. 4° elongato tenui, acuminato; maxillares art. 3° interne, 2° externe incrassato; labiales art. 3° robusto externe incrassato, 2° parvo, cylindrico. Labrum parvum basi, angustatum subtrigonum, antice emarginatum. Mandibulæ elongatæ, porrectæ, trigonæ, apice arcuatæ, infra medium pluries dentatæ. Antennæ robustæ corporis med. fere attingentes, art. 1° et 11° mediocribus, subæqualibus, 2-4 et 5-10 inter se subæqualibus, illis subcylindricis, his cum 11° ovatis. Thorax subcordatus basi quadratus. Pedunculus brevis. Elytra apice rotundata. Pedes anteriores tibiis profunde emarginatis tarsis leviter contractis, art 1-4 gradatim minoribus, art. 1° subcylindrico, 2-4 subtrigonis, hoc subtus apice spino tenui munito, 5° sat magno, unguibus simplicibus.

### 37. OCHTHEPHILUS CEYLANICUS.

O. alatus brunneo-testaceus, pedibus palpisque testaceis, tenciter pubescens, fronte profunde 2-sulcata; elytris obsolete striatis, in striis punctatis; long. corp, $1\frac{1}{3}$ lin.

In fluviorum ripis Bembidiorum more victitat.

Apparently allied to *Trechus*, from which, however, it would seem to differ in the structure of the palpi, the labrum, &c.

The head is as broad as the thorax, and altogether of about the same size. It is strongly triangular from the eyes to the tip of the mandibles, the forehead is impressed with two deep

longitudinal furrows; the eyes are large, rather oval and prominent; behind them the head is abruptly contracted into a thick neck. The antennæ are long and thick, reaching nearly to the middle of the body, joints 1 and 11, 2-4, 5-10 are subequal among themselves, 5-11 oval, 1-4 subcylindric. The labrum is small, rather triangular, being narrowed at its base, it is emarginated in front with a slight angle in the middle of the emargination. The mandibles are long, straight, triangular, bent at the tip only, dentated below the middle, the one more so than the other. The maxillæ are thin and slender, gently bent outwards at the base and inwards at the apex, the outer lobe corresponding with the inner one in shape and strength. The palpi are robust, both the maxillary and labial ones have joint 4 elongated, thin and acuminated, in fact needle-shaped, firmly implanted in the preceding one, not loosely hinged to it. The maxillary ones have joints 3 and 2 robust, the former swollen on the inner, the latter on the outer side. In the labial ones joint 3 is still plumper than in the others, but differs in shape by being incrassated on the outer, instead of the inner side, the second joint being at the same time quite small and cylindric. The mentum is large and simple as above described. The ligula is small, oblong, very slightly narrowed and transversely cut away at the apex, the paraglossæ separate from its sides a little below the anterior corners, they are setiform and reach much beyond it. The whole organ is of membranaceous texture: having, however, a more substantial centre or back. The thorax and elytra are simple and sufficiently described above. I may add that the former is divided by a longitudinal furrow and that both are furnished with a narrow margin at the sides. The scutellum is very small, and the abdomen furnished with a short peduncle. The legs are weak, simple, and nearly equal, the anterior tibiæ are deeply notched, the lower margin of the fourth tarsal joint of the same pair is furnished with a long thin spine, the apex of which fits in between the claws, as in *Lymnœum Steph.* I have been unable to discover any footbrushes or other sexual distinctions, in the specimens be-

fore me and therefore conclude that accidentally they are all females.

The habits of the insect are those of the *Bembidia*, in whose society it lives upon the banks of rivers, taking, like them, readily to its wings. I have found it occasionally in considerable numbers upon the sandy banks of the Mahá Oya in the neighbourhood of Negombo close to the edge of the water.

### IV. Creagris, *n. g.* *N.*

### Fam. Carabidæ.

### Trib, Lebiidæ *vel* Pericalidæ.

Corpus oblongum valde depressum. Caput magnum robustum; oculis mediocribus, ovatis, sat prominulis; collo brevi. Mentum forma ferri equini vel trifurcatum (hinc n. g. Creagris) lobis angustis, subparallelis, apice oblique truncatis, angulo interno producto, dente lobis parum breviore, tenui, acutissimo. Ligula magna cornea apicem versus dilatata, apice transversim truncata angulis rotundatis, paraglossis sat robustis connatis marginem anter. non attingentibus, apice vix liberis, ovatis. Palpi maxill. art 4° claviformi apice fertiter truncato, 3° parvo, 2° intus excavato; labiales art. 4° subelliptico, truncato. Labrum maximum, suborbiculatum, convexum. Mandibulæ parvæ basi obsolete unidentatæ, labro obtectæ. Antennæ robustæ humeros parum superantes submoniliformes art. 1, 3 et 11 longitudine fere subæquali, mediocribus, 2° parvo, basi cylindrico, apice rotundato, 4-10 subæqualibus, cum 11° ovatis. Thorax parvus, capite sesqui minor, transversus, longitudine duplo fere latior, infra med. fortius angustatus, basi parum prolongatus. Pedunculus brevis. Elytra apicem versus leviter dilatata, apice fortiter subquadrate truncata. Pedes robusti simplices subæquales, ant. tibiis profunde excavatis, omnes tarsis brevibus, art. 1° sequentium 2 fere longitudine, subcylindrico-trigono, 2-3 gradatim minoribus, 2° trigono, 3° transversim trigono, 4° magno, profunde bilobo, 5 mediocri, unguibus, simplicibus, art. 4° subtus dense penicillato.

### 38. Creagris labrosa. *N.*

C. picea, subtus dilutior, ore antennisque, coxis, trochanteribus, femorum tibiarumque apice et tarsis brunneis; dense punctata tenniterque pubescens; elytris striatis; long. crop. 4½ lin.

Specimina nonnulla prope Colombo nocte ad lumen cepi.

I consider this scarce and interesting insect to form a passage between the *Lebiidæ* and *Pericalidæ*, but am doubtful

to which of these two tribes to refer it as, although it partakes of the characteristics of either, it is at the same time distinct from both. Distinguished in several respects, its most extraordinary character lies in the curious shape of the mentum. This is, however, easily described as large, of the shape of a *horseshoe* with a long, thin, very pointed tooth in the middle, the apical half of the sides (lobes) being at the same time gently dilated, the apex itself being obliquely cut away from the outer towards the inner side—the inner angle being the most advanced, and slightly dentated at the edge thus formed. Or it may also be described as *a fork* with the outer teeth somewhat enlarged, truncated at the apex and so forth. The other parts of the mouth have not much to distinguish them, with the exception, however, of the labrum which attains a very extraordinary degree of development, occupying *rather more than one third of the whole head, although the latter itself is large and heavy.* It is of a suborbicular shape, very slightly produced in front into an obtuse angle, is vaulted, covers the mandibles, has two longitudinal impressions at the sides of the base and is highly polished. The head has two impressions in front of the eyes, is densely punctured and thinly pubescent, it is strongly but gradually contracted behind the eyes and formed into a short neck. The antennæ are strong and reach a little beyond the shoulders, joints 1, 3 and 11, are of about equal length, middling, the former two subcylindric; joint 2 is small, rounded, 4-10 sub-equal and with 11 oval. The thorax is small, only half as large as the head, rather narrower, strongly transverse, nearly twice as broad as long, slightly emarginated in front, the anterior angles rounded, contracted below the middle, subquadratic and prolonged at the base, posterior angles depressed, longitudinally divided by a deep furrow. The elytra are striated, and, as the thorax densely punctured and thinly pubescent. The legs are strong, simple, and subequal, the anterior tibiæ are deeply notched, the first joint of the tarsi is as long as the two succeeding ones together, subcylindric, the second triangular, the third of a similar but more transverse form, smaller; all three have the apical angles

acuminated, the fourth is large and deeply bilobed, the fifth middling, thin, the claws simple. The tarsi are altogether short and strong, the first joint is furnished with longer, the second and third with shorter stiff hair, whilst the fourth is strongly penicillated below. The anterior tibiæ are slightly spinose, the others more so.

The legs in all my specimens are exactly the same, and I hardly know whether they are males or females. The insect has a peculiar, rather strong smell about it, resembling that of soap.

### V. Heteroglossa, *n. g.* *N.*
### Fam. Carabidæ.
### Trib. Galeritidæ.

Corpus oblongum, subparallelum, depressum, tenuiter hirsutum, Caput mediocre, oculis semiglobosis sat prominulis; collo brevi. Mentum sat profunde subquadrate emarginatum, lobis magnis extus fortiter rotundatis apice abrupte acuminatis, dente magno excavato, apice leviter inflecto, obtuso, magis minusve profunde sinuato. Ligula subcornea apice libera, truncata: vel quadrata vel obconica vel leviter bisinuata; paraglossis cylindricis, marginem anteriorem longissime superantibus, magis minusve incurvatis. Palpi hirsuti art. ultimo sat elongato, subcylindrico, apice truncato vel subtrigono. Labrum transversum antice emarginatum. Mandibulæ validæ trigonæ, apice arcuatæ, basi pluries dentatæ. Antennæ robustæ corporis med. attingentes, art. 1° incrassato sequentibus 2 longiore, 2° parvo, 3-11 subæqualibus. Thorax subcordatus, basi transversim truncatus leviterque prolongatus. Pedunculus brevis. Elytra apice fortiter subquadrate truncata, costata costis 16 majoribus, in interstitiis subtilissime bicostulata, in sulcis (sulco e tribus inter costas binas majores medio excepto) tenuiter pilosa, in omnibus transversim rugulosa. Pedes anteriores tibiis sat fortiter emarginatis, tarsis maris art. 1-3 leviter dilatatis, subtus squamularum seriebus 2 munitis, art. 1° elongato-trigono, 2-3 rotundato-trigonis, 3° præcedente parum minore, 4° parvo, cordato, 3° plus sesqui minore, his omnibus angulis acuminatis, 5° magno, unguibus simplicibus.

This diagnosis may appear somewhat vague, still I have been unable to express the characteristics of the insects from which it is drawn in more precise terms, although they have features quite peculiar to themselves by which they are easily recognised when once seen.

The points on which the three species which form this genus more or less disagree are the following:—

1) The labrum—is more transverse in *H. elegans* and less deeply emarginated in *H. ruficollis* than in the other two species respectively—still in all three it is *emarginated*, and has moreover the peculiarity of being furnished with bristles at the two anterior corners.

2) The mentum—is subquadratically emarginated, the lobes being strongly rounded on the outer side and abruptly acuminated at the apex. At the base of the emargination it is furnished with a broad, excavated tooth, which is inflected and obtuse at the apex. So far all three species agree. However, whilst in *H. elegans* and *ruficollis*, this tooth is slightly emarginated at the apex, it is sharply notched in *H. bimaculata*,—in fact bilobed, the lobes being large and rounded at the apex. I look upon this notch, which is sharp but not deep, as a mere variation from the emargination existing at the apex of the tooth of the two former species.

3) The palpi—labial as well as maxillary have their terminal joint truncated at the apex—and so far again all three species agree. However, whilst this joint is of elliptic form in the palpi of *H. ruficollis*, it is in *H. elegans* only so in the labial ones, that of the maxillary ones being cylindric at the base. In *H. bimaculata* finally, this joint is rather clubshaped or subtriangular and more strongly truncated than in the two former species.

4) The ligula—is of subcoriaceous texture, middling size, the shape of an oblong square, free and transversely truncated at the apex. These characters are common to all three species and in *H. ruficollis* I have nothing to add to it. However, the anterior margin, which is straight in this species, is slightly bisinuated in *H. elegans,* the outer angles being acute and the central one obtuse. The ligula of *H. bimaculata* differs from both the former in as far as it is narrowed towards the apex and depressed towards the sides and the front, the anterior margin is otherwise cut away straight, without any sinuosities, but it is rather strongly armed with

bristles. The paraglossæ agree in all three species in as far as they are highly developed, reach much beyond the anterior margin of the ligula and are more or less bent inwards. Their greatest development they assume in *H. elegans*, in which they nearly touch each other in front of the anterior margin, being cylindric and slender at the same time. In *H. ruficollis* the paraglossæ are somewhat shorter and straighter, and in *H, bimaculata* still more so.

On all other points the three species perfectly agree; in saying which I lay particular weight upon the unusual sculpture of the elytra, and the rather peculiar hairy vesture of the insects, bearing also in mind their general appearance, proportions, system of coloration, mode of living, etc. As to the hairy vesture of certain parts of the body and the sculpture of the elytra, it is true that these are not generally looked upon as of much importance; however, they appear to me so in this instance, as they present certain unusual variations, repeated in all three species. The hairy vesture consists in thin yellowish or reddish hairs, thinly seminated over the back, and still more thinly over the whole of the lower surface of the insects, being at the same time longer at the latter place. This vesture acquires its greatest density on the legs, especially the tibiæ and tarsi, whilst their uniform presence at the palpi forms almost a generic character. The elytra are exquisitely sculptured into about eight larger costæ on either of them and into two smaller ones between every two of these; the furrows thus formed are finely transversely rugose and—with the exception of the central furrow between every two larger costæ—thinly pubescent.

### 39. Heteroglossa elegans. *N.*

H. supra rufo-castanea, capite obscuriore, maculis 2 humeralibus obsoletissimis ferrugineis; subtus dilutior, pedibus, antennis oreque subtestaceis, elytris ad angulos apical. extern. testaceis; long. corp. 3½ lin.

In lacus Colombensis ripis sub vegetab. putrescent. non infrequenter cepi.

An agile, pretty little insect of chocolate color and with its family features about it. Head smooth, polished, above

and below slightly punctured, with two impressions in front of the eyes, anterior angles of labrum rather acuminated. Thorax deeper and more densely punctured than the head, with the elytra thinly hirsute, rather strongly emarginated in front, less so behind, sides, especially at the basal angles, depressed, divided longitudinally by a deep furrow. Scutellum, like thorax, punctured and hairy. Elytra with the inner apical angle right and the outer rounded off, largely punctured within the margin, especially near the apex. Tibiæ with a row of larger spines down the outer and a row of smaller ones down the inner side, four calcarated at the apex, the two inner spurs larger.

### 40. Heteroglossa ruficollis. *N.*

H. colore præcedentis sed obscurior, thorace pectoreque rufo-testaceis, antennis art. 3 primis nigrescentibus; long. corp. 4½ lin.

Cum præcedente et per occasionem nocte ad lumen cepi.

The shape of the body is quite that of the former but the insect is larger. The head is less distinctly punctured than in the former, and there is an additional impression in the middle of the forehead. The thorax is also less deeply punctured, but the divisional furrow is more so than in the preceding species. The anterior tibiæ appear somewhat less deeply notched. There is nothing else to add to the description that has not been pointed out already.

### 41. Heteroglossa bimaculata. *N.*

H. subcastanea, thorace dilutiore, capite rufo-testaceo, elytris ante medium maculis 2 flavis, pedibus abdominisque apice testaceis; long. corp. 5½ lin. variat colore obscuriore et dilutiore.

Ubi præcedentes sed infrequenter legi.

Head, with the exception of the forehead, deeply punctured, with two impressions in front of the eyes, anterior angles of labrum rounded. Thorax densely and deeply punctured, with elytra thinly pubescent. The latter with a round yellow spot at the middle of either. This species is capable of discharging a pungent, blistering liquid of brown color

and strong smell from the anus. I have often handled the other two species but observed nothing of the kind.

---

## No. V.

The Trigonotomidæ with an elliptic terminal joint of the palpi are abundantly represented amongst the Ceylon *Carabidæ*, thus making amends for the want of other tribes of the section to which they belong. I have now before me a great many individuals of different species which I have endeavoured to distribute into genera after the works of Lacordaire, Dejean and others of less importance.

A single glance almost convinced me that they must belong either to *Abacetus*, *Distrigus*, or *Drimostoma*—genera closely allied, and whose principal, (in fact only essential), distinction would appear to reside in the shape of the mentum-tooth. If it is a well established fact, which cannot be doubted, from the above authors, that this tooth is *pointed* in *Drimostoma*,—*large, rounded, equalling the lateral lobes* in *Abacetus*,—and *large and truncated* in *Distrigus*,—the species described below could not, as to their genera, be distributed otherwise than I have done, namely, five *Distrigi* and one *Drimostoma*. The species which I have drawn to the former genus have a large, more or less square tooth, slightly rounded at the anterior angles. It is impossible to call this tooth of the five species *pointed* in any way; they cannot therefore belong to the genus *Drimostoma*; nor can any of them be drawn to *Abacetus*, which genus is moreover apparently exclusively African. As to the insect which I

---

☞ *Barysomus Gyllenhali* Dej. A gross oversight of the vesture of the anter. male tarsi and some incorrect information regarding the insect I received from Europe led me into the error of describing it as new in the first edition of these papers. However, having since examined it more closely, I may mention here that joints 2-4 only of the anterior male tarsi are furnished with squamulæ below, and not joints 1-4, as stated by other authors.

have placed in the genus *Drimostoma*, its mentum-tooth is not exactly pointed, but it is altogether narrower than in *Distrigus* and might well be called "*assez aigué*," as Dejean describes it. This insect differs, moreover, very materially in general appearance as well as in its details from my *Distrigi*; and I feel sure that it belongs to the genus in which I have placed it, although it does not quite agree with Lacordaire's description—the labrum being emarginated in front, the second joint of the maxill. palpi exhibiting nothing unusual, &c. As to the species which I have established, I feel very certain that they are new and good ones, as it would appear from the quotations in Lacordaire "*Gen. d. Col.*" that since Dejean's descriptions no new ones of Indian species have been published.

These insects live in the manner of the European *Feronidæ*, but appear to affect rather damp localities, some of them take freely to their wings and fly commonly into houses in the evenings during the rainy weather.

### 42. Distrigus costatus. *N.*

D. nigerrimus, nitidus, subtilissime parce punctulatus, ore pedibusque piceis, tarsis antennisque castaneis, palpis brunneo-testaceis, long. corp. $4\frac{3}{4}$ lin.

Capite clypeo fronteque leviter excavatis, hac impressionibus 2 lateralibus semilunaribus profundissimis rugulisque nonnullis transversis; mandibulis fortiter sulcatis; menti dente magno excavato; thorace longitudine parum latiore, breviter obcordato, lateribus rotundato, basin versus angustato, basi truncato medio leviter emarginato, antice lateribus fortiter deflexo, dorso posticeque plano, basi longitudinaliter profunde 2-impresso, inter impressionibus leviter transversim rugoso, ad marginem ant. et post. obsolete sulculato, dorso rugulis nonnullis transversis subtilibus, linea med. longitud. subtili extremis profundis diviso; elytris profunde striatis, interstitiis fere planis, puncto ad striam $2^m$ medio obsoleto; *tarsis dorso fortiter 3-costatis*; prosterno plano.

Sub quisquiliis in ripis lacus Colombensis communis.

Apparently closely allied to *D. impressicollis*, Dej. However, if the description given in the Spec. gen. embraces all the characteristics of this latter species mine is undoubtedly different from it. Dejean says nothing about the costæ on the

back of the tarsi which are the principal characteristics in my species, nor are such costæ of general occurrence or of so little importance that it could be supposed they had been left unnoticed by Dejean from these reasons. I cannot possibly call the thorax of my *D. costatus* "subquadratic;" it is rounded at the sides, narrowed behind, and cut away at the base. The striæ of the elytra of my species are not punctured in the bottom, as those of the *D. impressicollis* are stated to be. In mentioning the inter-antennal impressions Dejean would certainly not have overlooked the depression in the centre of the forehead nor that of the clypeus, which distinguish my insect, had they existed in the one he described. The former is round: the latter transverse. I further fail to discover in my species the "*reflet un peu changeant*" of the elytra, and that the base of the thorax is "*assez fortement ponctuée et que les points se confondent souvent ensemble*;" nor do I consider the interstices of the elytra "*relevés, presque arrondis*," or the head "*un peu rétrécie posterieurement*;" the skull is of the same breadth from the antennæ to the occiput.

### 43. Distrigus submetallicus. *N.*

D. supra niger æneo-micans, nitidus; subtus piceus, pedibus, ore antennisque obscure castaneis, tarsis brunneo-testaceis long. corp. 3 lin.

Capite præcedentis sed fronte haud excavato; mandibulis strigosis; menti dente mediocri; thorace breviter rotundato-obcordato, præcedente lateribus magis rotundato, antice magis deflexo, postice fortius quadrato, hic 3-impresso, impressione media lateralibus minus profunda ad apicem prolongata, inter impressionibus punctato longitudinaliterque ruguloso; scutello excavato; elytris striatis, ad striam 2m ante medium utrinque puncto impresso, interstitiis deplanatis; tarsis lævibus; prosterno profunde canaliculato.

Ubi præcedentem specimen singulum m. cepi.

### 44. Distrigus rufo-piceus. *N.*

D. rufo-piceus, nitidus, pedibus, thoracis elytrorumque margine testaceis, antennis brunneo-testaceis, mandibulis brunneis, long. corp. 3 lin.

Capite inter antennas profunde longitud. 2-impresso, fronte medio leviter depresso, labro quadrato-rotundato, mandibulis infra medium sulcatis, menti dente mediocri, excavato, apice subrotundato; thorace D.

costati, sed parum brevior, basi 2-impresso, linea media longitud. fere obsoleta, rugulis nonnullis transversis subtilibus; scutello, elytris pedibusque præcedentis sed elytris puncto ad striam 2m infra medium obsoleto; prosterno leviter canaliculato.

In ripis lacus Colombensis specimen singulum legi.

### 45. Distrigus æneus. *N.*

D. supra æneus, subtus piceus, pedibus dilutioribus, antennis palpisque rufo-piceis, long. corp. 2½—3 lin.

Capite ante oculos profunde oblique 2-sulcato, rugulisque nonnullis transversis, clypeo fronteque sæpius leviter depresso, mandibulis leviter sulcatis, menti dente mediocri; thorace rotundato-obcordato, basi quadrate truncato, 3-impresso, impressione media minus profunda in lineam subtilem ad apicem prolongata, inter impressionibus profunde punctata, antice leviter strigoso, dorso subtiliter transversim ruguloso; elytris striatis, ad striam 2m medio distinctius puncto impresso; prosterno sat fortiter canaliculato.

Prope Colombo in arenis subhumidis et nocte ad lumen communissimus.

### 46. Distrigus Dejeani. *N.*

D. piceo-niger, subtus sæpius rufo-piceus, nitidus, capite æneo-micante, pedibus, elytrorum margine antennisque rufo-piceis, palpis testaceis long. corp. vix. 2½ lin.

Capite inter antennas 2-impresso, fronte leviter excavato, mandibulis subtiliter sulculatis, mentum præcedentis; thorace robustiore, ut in præcedente sculpto et signato sed antice non strigoso; elytris pedibusque præcedentis, illorum tamen puncto minus distincto; prosterno fere plano.

Cum præcedente communissime occurrit.

### 47. Drimostoma Ceylanicum. *N.*

D. nigro-piceum, nitidum, pedibus piceis, tarsis, antennis oreque, dilutioribus, palpis testaceis, long. corp. 2¾—3 lin.

Capite ante oculos profunde 2-impresso, labro antice leviter emarginato, mandibulis elongatis, rectis, acutis, lævibus, menti dente sat acuminato, antennis art. 2-4 gradatim longioribus; * thorace obcordato, postice fortius angustato, quadrato, lævi, basi 2-impresso, lenea longitud. med. diviso, antice impressione semilunari (impressionibus his omnibus

---

* In the *Distrigi* just described, joints 3 and 4 are sub-equal.

profundioribus); elytris striatis, interstitiis parum elevatis; prosterno sat fortiter longitud. impresso.

In prov. occid. non frequenter occurrit.

### 48. Casnonia punctata. *N.*

C. supra subtusque (occipite abdomineque exceptis) dense profundeque punctata, brunneo-picea, elytrorum margine maculisque 2 apicalibus longitudinalique cum margine confluentibus brunneo-testaceis, pedibus flavis, trochanteribus, geniculis tarsisque obscurioribus, ore dilute brunneo, antennarum art. 1° palporumque art. 2 basalibus flavis; long. corp. 3 lin.

Specimina nonnulla mens. Decemb. prope Colombo nocte ad lumen cepi.

Smaller than the *Ophionea cyanocephala.* The head is robust, with two impressions between the antennæ and a third just above them, somewhat of the shape of an inverted V. Occiput less narrowed than in *O. cyanoceph.*, smooth. The anterior part of the head deeply punctured. The labrum is lightly produced in the middle. Thorax much plumper than in *O. cyanoceph.*, hardly as long as the head, not much narrower, conic, considerably narrowed and cylindric at the base, densely and deeply punctured, especially at the base. Elytra with the shoulders straighter than in *O. cyanoceph.*, impressed with rows of deep punctures growing smaller and shallower towards the apex, with a few small hairs near the latter part; in the third and fifth interstice three setigerous punctures, in the third and fourth interstice a longitudinal apical macula of yellowish color flowing together with the margin which is of the same color, two shallow impressions on either side, one below the shoulders, the other near the apex. Legs shorter than in *O. cyanoceph.*

### 49. Casnonia pilifera. *N.*

C. glabearima, nitidissimi (quasi lacca obducta), pilis longis sparsis vestita, nigra, ore (labro excepto) antennisque brunneis, his apicem versus dilutioribus, elytris maculis 2 subapicalibus argenteis, pedibus piceis, femoribus basi albis, trochanteribus obscurioribus, tibiis tarsisque brunnescentibus; long. corp. $3\frac{3}{4}$ lin.

Specimina nonnulla cum præcedente cepi.

This elegant species is of the same size as the *O. cyanocephala*, but, with the exception of the elytra and abdomen, which are shorter and plumper, still more slender and graceful. Head large, very narrow and prolonged behind, much more so than in *O. cyanocephala*, with two large shallow impressions between the antennæ, and another small one just above them. Occiput slightly transversely rugose. Thorax very slender, half as broad as the head, of hardly the same length, obconic, constricted below the apex, then gradually increasing in size to below the middle, the base abruptly narrowed, cylindric and impressed with three deep annuliform wrinkles. Elytra about as long as thorax and occiput together, increasing very sensibly in breadth to below the middle. The apex is much more obliquely cut away than in *O. cyanocephala* or the preceding species. The shoulders are full and hide the margin. Just below them the elytra are deeply excavated; showing, moreover, three deep longitudinal impressions in the bottom of either excavation and a slight yellowish spot, hardly to be distinguished, at the outer part of it. A round spot of silvery appearance adorns the hind part of either elytron. There are two rows of long thin hairs, placed at considerable distances from each other, on the back of either elytron and a third just within the margin; the same thin hairs are scattered about the thorax, femora, and elsewhere. The legs are longer and more slender than in *O. cyanocephala*.

The *Ophionia cyanocephala* is not scarce in this part of the Island. It affects rather damp, grassy localities, where it mounts upon the stalks of the plants, as Helfer has observed of some species in Bengal, but quite different from the observations Lacordaire has made with regard to the American species of the genus. However, it is much more frequently taken about the light at night. The two species just described are much scarcer. Mr. C. A. Dohrn of Stettin writes to me that he has received another species from me (*Cypris D.*) which, however, I do not recollect. It would appear to be smaller than either of the former, black, with white tips to the antennæ.

## VI. Symphyus, *n. g.* *N.*
### Fam, Carabidæ.
### Trib. Feronidæ.

Corpus robustum oblongo-ovatum, subdepressum. Caput mediocre postice haud angustatum, oculis mediocribus, sat prominulis, globosis. Mentum semicirculare profunde emarginatum, dente forti spiniformi, lobis haud breviore, ligulæ cannato (hinc *n. g. Symphyus*), profunde excavato. Ligula subcoriacea inverte trigona, dorso elevato, paraglossis magnis connatis, eam sat longe superantibus, apice cylindricis. Palpi art. 4° ovato, apice truncato; maxillares art. 3° elongato. Labrum parvum profunde angulate emarginatum. Mandibulæ validissimæ, subtrigonæ, porrectæ, una 1-, altera 2-dentata. Antennæ filiformes, humeros parum superantibus, art. 1° mediocri, 2° parvo, 3° sequenti paulo minore, 4-11 subæqualibus, 5-11 depressis. Thorax subquadrato-cordatus lateribus rotundatus, basi angustatus, quadratus, angulis posticis leviter oblique truncatis. Elytra ovata, parallela, apice rotundata et leviter utrinque sinuata. Pedes mediocres, tibiis ant. leviter dilatatis, profunde emarginatis; intermed. fortiter spinosis; tarsi art. 1° cylindrico-trigono, 2-3 trigonis, 4° obcordato, unguiculis simplicibus. (Mas latet).

### 50. Symphyus unicolor. *N.*

S. niger, nitidus, glaber, pedibus oreque piceis, long. corp. $8\frac{1}{4}$ lin. lat. 3 lin.

Capite inter antennas 2-foveolato, mandibulis sulcatis; thorace antice haud, postice vix emarginato, hic 2-impresso, linea longitud. media diviso, ad marginem posteriorem longitud.—, dorso subtiliter transversim ruguloso; scutello leviter excavato; elytris striatis, in striis punctatis, interstitiis vix elevatis, cum thorace anguste marginatis.

Specimen singulum f. prope Colombo mens. Decembr. nocte ad lumen cepi.

This description is made from a single female individual, but I have little doubt that the insect belongs to the numerous tribe to which I have referred it; in which it ought perhaps to be placed near *Eccoptogenius Chaud.* I am, however, not sure whether the shape of its ligula does not entitle it to a place amongst the *Anchonoderidæ.* I may add to the above description that the accessory stria of the elytra is present, but that the puncture usually found upon the third interstice is wanting. The general appearance of the insect presents nothing whatever particular. However, upon further inspection

the deeply notched labrum and the strong porrected mandibles are very striking. The labrum appears to me of extraordinary construction; the mentum is large and of semicircular shape, deeply emarginated, which renders the lobes heavy, rounded outside, and pointed at the tip. In the bottom of this emargination stands a pointed, spinelike tooth, as long as the lobes. This tooth is deeply excavated or grooved and is clearly seen to be to its full length soldered together with the basal part of the ligula. Probably the entire mentum is in this manner connected with the adjoining part of the ligula; but in the other parts it is not so clearly observable as in the tooth, and I have not dissected the labrum. The ligula itself is of a leathery consistence, of the shape of an elongated inverted triangle with an elevated back, the anterior margin is straight and somewhat prolonged beyond what would be the sides of the triangle. The paraglossæ are of membranaceous texture, very broad, adhering to the sides of the ligula to its full length, taking then a slender, cylindric form and reaching considerably beyond it, being at the same time slightly bent inwards.

### VII. Calodromus, *n. g.* *N.*
### Fam. Carabidæ.
### Trib. Harpalidæ.

Corpus robustum, ovatum, subconvexum. Caput mediocre subquadratum, postice haud angustatum; oculis minoribus sat prominulis. Mentum profundius sublunate emarginatum, edentatum, lobis obtusis. Ligula oblonge quadrata, apicem versus dilatata, apice medio leviter producta, libera, paraglossis robustis eam parum superantibus, apice obtusis. Palpi art. 4° elliptico, apice leviter truncato. Labrum subtransversum, antice emarginatum, angulis rotundatis. Mandibulæ validæ, una 1-, altera 2-dentata. Antennæ robustæ, thoracis basin attingentes, art. 1, 3, 11 et 4-10 inter se subæqualibus, 1-2 cylindricis, 3° basi angustato, 4-11 ovatis, leviter depressis. Thorax transversus, lateribus leviter rotundatus, basi parum angustatus, quadratus, antice leviter emarginatus. Elytra thorace parum latiora, apice rotundata. Pedes robusti, ant. tibiis apice leviter dilatatis, profunde emarginatis, tarsis art. 1-4 gradatim minoribus, 1° subtrigono, 2-4 transversim trigonis, unguiculis validis, simplicibus, *mas* art. 1-4 leviter dilatatis, subtus squamulis 2-seriatim munitis; pedes intermed. et post. tibiis fortiter spinosis, tarsis simplicibus.

### 51. Calodromus exornatus. *N.*

C. glaber, nitidus, supralæte viridis, thoracis margine lato elytrorumque fascia inframarginali testaceis, capite viridi-brunneo, antice brunneo, scutello cum sutura brunneis, subtus brunneus, pedibus testaceis; long. corp. $4\frac{1}{3}$—$4\frac{1}{2}$ lin.

Capite inter antennas 2-impresso, thorace capite quartâ parte-, longitudine duplo latiore, basi 2-impresso, leviter rugoso-punctato, linea longitud. media diviso, cum elytris anguste marginatis; his profunde striatis.

Specimina nonnulla mens. Nov. et Decemb. prope Colombo nocte ad lumen cepi.

Very pretty insects apparently closely allied to the African genus *Bradybœnus Dej.* from which, however, they differ in the structure of the ligula and in other minor points. They are quite of the shape of a *Harpalus*, and I have no doubt that their habits are those of the latter. Joints 4—11 of the antennæ have very much the appearance of grains of rice strung together. The metallic green color with which the insect is adorned on the back is very rich; on the elytra it forms a pattern of two triangles with their tips down, that of the upper one being immersed in the base of the lower one, and the apex of the latter being divided. These triangles are flanked on either side by a broad longitudinal belt of yellowish color. The margin is again green with the exception of the apex which is occupied by the yellowish belt. The thorax is green in the centre and yellowish along the sides. The head is more or less brownish-green, lighter in the middle; the mouth is brown.

### 52. Zophium pubescens. *N.*

Z. rufo-testaceum, oculis nigris, occipite nigrescente, elytris pubescentibus fuscis maculis 2 subhumeralibus, 1 apicali communi testaceis ornatis; long. corp. $3\frac{3}{4}$ lin.

Antennis art. 1° capitis vix longitudine; labro integro; palpis art. ultimo trigono; menti dente magno obtuso, profunde canaliculato; thorace elongato-cordato, capitis latitudine, illo parum-, latitudine duplo longiore, medio leviter longitudinaliter depresso; elytris subtilissime dense pubescentibus, obsolete striato-impressis, humeris obsoletis.

Specimina nonulla in prov. occid. nocte ad lumen cepi.

This description does not quite agree with Lacordaire's diagnosis of the genus *Zophium* The labrum, the tooth of the mentum are not what they ought to be according to this author. However, Schmidt-Gœbel in his "Col. Birm." has already departed from Lacordaire's formula by describing six species of *Zophia* with an entire mentum-tooth, which, according to the former author, would make them *Polystichi* rather. The fact is, that this part of the labrum appears to be variable. In all other respects the insect agrees with Lacordaire's description of the genus.

The labrum is entire; the first antennal joint is hardly as long as the head, slightly curved and increasing in thickness towards the tip, the second joint is very small and rounded, the rest are subequal, filiform; the tooth of the mentum is very large, almost equalling the lobes, entire and deeply grooved at the apex; the maxill. palpi are porrected, the second joint is as long as the two following together, the fourth, in both the maxill. and labial ones, is triangular or slightly securiform, being obliquely truncated at the tip; the thorax is elongated cordiform, truncated at the base, the back is elevated, divided down the middle by an impression, the commencement of the elevation forms two knobs at the base; the first tarsal joint is as long as the three following together.

---

Amongst the 300 species of Bembidiidæ which have been described from almost all parts of the world, with the exception of Australia, it would appear there are also none from Southern Asia. However, since the publication of Lacordaire's "G. d. Col." (1854), in which this statement occurs, various species must have found their way into the Prussian cabinets with my collections from Bengal and this Island.

In the former country the *Carabidæ* are very abundantly represented, and I recollect with pleasure the great variety of them, from the gigantic *Anthia* down to the smallest *Bembidium*, the banks and the sands of the Ganges used to furnish me when leisurely travelling upon this river some years ago,

from August to October, just after the rains. Nowhere have I seen, nor do I expect to see, such swarms of *Cicindelæ.* Their buzzing flight when disturbed was heard like that of bees. It appeared to me that they did not quit the sands, their favourite haunts, when the tide rose, but allowed themselves to be covered over by the water, as other semiaquatic beetles do. Without especially hunting for them, I brought away with me some ten species, mostly new, and amongst the rest of the *Carabidæ* as many *Bembidia.*

In this Island, both in the hills and the plains, there is not a bank of a pond, lake or river, which has not, as in more northern latitudes, its *Bembidia*, and, contrary to what one would expect, they appear to be more common in the hot low country than in the cool hill region.

The majority of the species described below may any day be found upon the banks of the Colombo lake. None of the species, (which, as I said, must have found their way with my collections to Berlin and Stettin, and thence perhaps elsewhere,) have, to my knowledge, been described. The descriptions given below, must, therefore, I am fain to believe, be an interesting addition to the literature of this section of the *Carabidæ,* however inferior they may be to what they might have been had they been produced in Europe had the insects been collated with allied typical species. I have none of those typical representatives of the genus at hand nor is my recollection of them sufficiently distinct to permit of my drawing comparisons between them and the Ceylon insects now before me. Nevertheless, I hope I have set forth the peculiarities of my species with sufficient precision to distinguish them from, or identify them with, any other Cis-Himalayan species that may hereafter be described. As hopeless confusion appears to exist amongst the sub-genera, into which the original genus has been broken up, I have not attempted to refer my species to any of them, for fear of thereby doing anything but throwing additional light on the subject. There is no doubt that many more species exist in this Island, and that indeed, as in the case of the *Sta-*

*phylinidæ*, they will eventually be found to be quite as abundantly represented within the tropics as without. Nothing but their smallness has hitherto prevented their discovery.

### 53. Bembidium opulentum. *N.*

B. oblongum, subconvexum, nebuloso-æneum purpureo-micans, elytris apice sordide testaceis, subtus nigro-piceum, pedibus antennarumque basi testaceis, ore brunneo; long. corp. $1\frac{3}{4}$—2 lin.

Capite inter oculos 2-sulcato, oculis magnis prominulis, labro fortiter transverso, brevi, integro, mandibulis porrectis, antennis art. 2° sequentibus parum breviore; thorace transversim cordato antice posticeque truncato, haud emarginato, depresso, margine basique elevato, medio capite parum latiore, apicem versus modice—, basin versus fortius abrupteque angustato, angulis basalibus fortiter truncatis profundeque foveolatis, linea longitud. media abbreviata diviso; elytris ovatis humeris obsoletis, profunde striate punctatis, punctis apicem versus obsoletis, ante et infra medio utrinque foveolatis, apice lunula magna sordide testacea. Mas latet.

Prope Negombo in ripis Maha-Oyæ, fluvii, specimina nonnulla cepi.

The insect is of bronze color, a purple reflect appearing on the back in irregular patches as the light may fall upon it. The palpi and the base of the antennæ are of yellowish color, the apex of the third joint of the maxill. palpi, however, as well as that of the second, third and fourth antennal joint is brown, of which color is also the remaining part of the antennæ. The second antennal joint is the shortest, the third and fourth are rather longer than the following. The mandibles are rather straight and porrected. The sides of the thorax are almost angular and furnished with a setigerous puncture at the broadest part, that is, just before the middle. There are seven distinct rows of punctures on either elytron and an accessory one along the side of the scutellum, the rows decreasing in length towards the margin and the punctures in depth towards the apex, the first row on either side; changing however, before the apex into a furrow which falls in with that which sepaaates the margin from the rest of the elytron. Before and beyond the middle, in the region of the third row of punctures, is an excavation containing a puncture which is situated upon the third interstice. The excavation nearest the base is the deepest. The apex of the elytra is marked with a spot of

dirty yellowish color prolonged on either, side along the margin, which is here rather broad.

If my memory serves me right, the insect resembles the *Tachypus flavipes.*

### 54. Bembidium truncatum. *N.*

B. oblongum, valde depressum, brunneo-testaceum, oculis nigris, pedibus, antennis palpisque pallide testaceis ; long. corp. 1½ lin.

Capite magno, thorace quartâ parte prope minore, inter antennas 2-foveolato, oculis mediocribus, antennis art. 3° reliquis minore, 4-11 subæqualibus fortius ovatis ; thorace breviter cordato, antice posticeque truncato, haud emarginato, basi subquadrato parum prolongato, foveis basalibus obsoletis sed linea basali latitud. profunda lineaque longitud. med. distinctis; elytris oblongis apice *transversim truncatis*, juxta suturam utrinque obsolete 1-striatis, ante et infra med. puncto impressis.

In prov. occid. rarius.

The small size, large head and truncated elytra effectually distinguish this species. The truncated posterior angles of the thorax and the general appearance induce me to consider it allied to the preceding species, at all events to approach nearer to it than to any of the following species. The eyes are rather small for this genus. There are no traces of striæ on the elytra with the exception of one indistinct one along the suture.

### 55. Bembidium tropicum. *N.*

B. oblongum, depressum, brunneo-testaceum capite brunneo, elytris dorso nigris cyaneo-micantibus, pedibus, antennis palpisque testaceis ; long. corp. 1½ lin.

Capite inter oculos 2-fovelato- sulcato, oculis mediocribus, antennis fortius filiformibus art. 3° reliquis breviore ; thorace breviter transversim cordato antice posticeque truncato, haud emarginato, basi subquadrato angulis basalibus elevatis sed haud foveolatis, linea latitud. basali profunda, infra lineam strigoso, linea media longit. diviso ; elytris oblongo-ovatis utrinque juxta suturam 4-striatis, striis externis et his apicem versus obsoletis, in striis punctatis, infra marginem stria profunda abbreviata, ante medium et apicem in interstitio 4° puncto magno impressis, punctis anteapicalibus piliferis in sulcum ad apicem prolongatis semicirculum formantibus ; tarsis 4 anterioribus art. 4° subtus apice spinis squamulaceis 2 instructo.

In prov. occid. copiosum.

Of light brown color, the head darker, the elytra blackish on the back with a slight blue reflect, the base, sides and apex brownish; the colors being more or less washed into each other no distinct pattern is observable. The brown spot of the apex, however, is generally pretty clearly set off from the adjoining dark part. The paraglossæ are hardly longer than the ligula which itself is rather large. The antennæ are rather hairy and strongly filiform, (not, as in most other species, increasing in thickness towards the apex, the joints growing at the same time more and more oval); joint 3 is the shortest, 2 and 4 are rather longer than the other. The back is impressed with three to four distinct striæ on either side of the suture, the external ones being obsolete as are also the remaining ones towards the apex. There is an additional deep stria within the marginal one, extending from the middle to the apex. Before the middle, and before the apex, there is a puncture situated upon the fourth interstice; the anteapical one of these has a hair in the centre and is prolonged to the apical angle in the shape of a deep, curved furrow. This being the case on either side, the two furrows together form a semicircular figure. The tarsi are each furnished with bristles, especially at the lower margin of the apex of the joints. In the four anterior tarsi joint 4 is furnished at that place with two long bristles the apex of which fits in at the base of the claws. These bristles partake somewhat of the nature of squamulæ by being dilated in the shape of a lancet. I have noticed them occasionally to be bifid at the apex, but I do not think that they are so always.

### 56. Bembidium triangulare. *N.*

B. oblongum, depressum, testaceum, capite brunneo, elytris sutura fasciaque lata transversali media nigris pedibus, palpis antennisque pallide testaceis his medio fuscescentibus; long. corp. 1. lin.

Præcedenti affine, ejus capite, thorace et tarsis, differt thorace linea basali punctata, infra lineam vix strigoso; elytris utrinque profunde 6-punctato-striatis, striis apicem marginemque versus sensim obsoletis, ante medium in stria 4a puncto impresso, stria inframarginali abbreviata et impressione semicirculari apicali ut in præcedente.

Variat colore obscuriore. In prov. occid. communissimum.

Very closely allied to the preceding species; easily distinguished however by size, color—which is generally lighter than that of the former,—and the deeply striated elytra. The insect is, moreover, more common than the former. The prevailing color of the elytra is not, as in the preceding species, black, but it is that of the rest of the body, yellowish, with merely a black suture and black belt across the middle; the edges of this belt are washed together with the color of the adjoining parts. The semicircular impression at the apex of the elytra is the same as in the former, and forms with the abbreviated inframarginal stria, (which is also the same,) a triangular figure, tip down, base open, whence I have derived the name. The head with the antennæ, tarsi, etc, are those of the former, as I have said above.

### 57. Bembidium Ceylanicum. *N.*

B. oblongum, depressum, testaceum, oculis nigris, elytris sæpissime fascia media transversali fusca obsoletissima, pedibus, palpis antennisque pallide testaceis; long. corp. $\frac{3}{4}$ lin.

Præcedenti simile, ejus capite, thorace et tarsis, facillime tamen distinguendum antennis apicem versus incrassatis articulis magis magisque ovatis, art. 2° sequente longiore, 3-4 subæqualibus subcylindricis, reliquis ovatis; thorace, linea basali fortiter punctata excepta, basi lævi; elytris utrinque juxta suturam leviter 3-punctato-striatis, striis reliquis et his basi apiceque sensim obsoletis, ante et infra medium ad striam 3m puncto pilifero impressis, impressione semicirculari apicali ut in præcedente sed stria inframarginali non abbreviata.

In prov. occid. communissimum.

Easily distinguished from the former, to which it is allied, by size, color and the incrassated antennæ. The elytra, moreover, shew only three distinct striæ on either side of the suture, two more, however, being just traceable. They are obsolete at the base, apex and towards the margin. Within the latter there is an additional deep stria, entire, and not, as in the preceding two species, only from the middle to the apex. The semicircular impression of the apex, however, is the same, so are the tarsi, etc.

### 58. Bembidium Klugii. *N.*

B. ovatum, convexum, æneum, elytris maculis 2 subapicalibus ruso-flavis, subtus piceum, pedibus dilutioribus, tibiis, tarsis antennarumque basi testaceis; long. corp. 1½ lin.

Capite inter oculos longitud. 2-impresso, oculis maximis, antennis art. 2° sequentibus parum breviore, his subæqualibus; thorace transversim ovato, antice posticeque truncato, haud emarginato, basi abrupte angustato quadrato, angulis basalibus profunde foveolatis inter foveis punctis 1-seriatim impresso, linea media longit. subtili diviso; elytris ovatis apicem versus leviter angustatis, utrinque profunde 7-punctato-striatis, basi lævi, striis apicem versus obsoletis, ante apicem inter strias 3-6 macula orbiculari rufo-flava apiceque impressione semicirculari.

In prov. occid. et central., hic usque alt. 3500 ped., non infrequenter legi.

This species ascends from the sea level of the Western Province to an elevation of 3,500 feet in the hills, where I have not unfrequently met it upon the sandy banks of the Pundalu-Oya, a rocky mountain-stream in the district of Kotmalé. Its robust, ovate, convex shape places it at once in a different division from any of the former. It is of bronze color with two orange colored spots behind, the mouth is brown with the exception of the palpi, which, together with joints 1 and 2 of the antennæ, are yellowish, joint 3 of the maxill. palpi, however, is of the general color of the mouth. The labrum is square and entire, the second antennal joint is rather shorter than the rest. The thorax is transversely ovate, that is to say, its greatest width is at the middle, not as in a cordate thorax, before it, the foveæ are connected by a series of punctures which gradually deepen towards the centre, the longitud. divisional line is also deeper at the apical extremity than at the other parts. The elytra are impressed with seven deep furrows on either side deeply punctured at the bottom. These furrows decrease in length towards the margin and in depth towards the apex, with the exception, however, of the first on either side, which go straight down to the apex. At the latter comparatively smooth place is the semicircular impression noticed in the three preceding, and to be noticed in all the following species. The base of the elytra is smooth. There

are no traces of punctures, such as are usual in the region of the third or fourth interstice, observable. The lower side of the insect is of pitch color, the basal part of the legs and the thighs are lighter and the tibiæ and tarsi quite light.

### 59. Bembidium ebeninum. *N.*

B. ovatum, convexum, nigrum elytris ante apicem maculis 2 rufo-flavis, subtus piceum, pedibus palpis antennisque testaceis, his apicem versus obscurioribus, reliquis oris partibus brunneis; long. corp. 1½ lin.

Præcedenti affine, ejus capite et thorace, facillime tamen distinguendum præter colorem antennis fortius filiformibus, elytris lævibus juxta suturam utrinque 2-striatis, striis basi abbreviatis, externa apicem versus obsoleta, ante et infra medium leviter foveolatis, ante apicem macula ovata rufo-flava, infra marginem stria profunda apiceque semicirculariter impressis.

In prov. occid. non rarum.

Very closely allied to the former and equally pretty. Head and thorax entirely those of the former, the antennæ, however, are more filiform and the divisional line of the thorax is not deepened at the apical extremity. The elytra are smooth, with only two striæ along the suture on either side, the rest not being even traceable. Both these striæ are abbreviated at the base and the outer one becomes obsolete towards the apex; the inner one, however, goes fully down to the apex, and falls in with a deep inframarginal furrow which is wanting in the preceding species. Before and beyond the middle is a small impression, before the apex are two oval spots of orange color; the apex has the semicircular impression noticed in the preceding species.

### 60. Bembidium Orientale. *N.*

B. fortiter ovatum, convexum, æneum elytris maculis 4 magnis flavis apice sordide subtestaceis subtus piceum abdomine brunneo, pedibus, antennarum basi palpisque pallide testaceis; long. corp. 1¼ lin.

Capite inter oculos longitud. 2-impresso, oculis maximis, antennis, art. 3-4 subæqualibus, 2° his vix breviore; thorace transverso leviter ovato, antice posticeque truncato, haud emarginato, leviter angustato, basi quadrato, 2-foveolato, inter foveis punctis 1-seriatim impressis, linea longit. media diviso; elytris ovatis apicem versus fortius angustatis, utrinque profunde 7-striatis, basi lævi, striis marginem apicemque versus

magis magisque obsoletis, in stria 3a ante et infra medium puncto impressis, infra humeros inter striam 5m et marginem macula ovata, ante apicem inter striam 2m et marginem macula obliqua flava, apice sordide obsoleteque testaceis, hic semicirculariter et infra marginem stria profunda impressis.

In prov. occid. commune.

Easily distinguished by its strongly oval shape, the thorax being hardly contracted at the base and no doubt belonging to a different sub-genus from the preceding and the following. The head is quite that of *B. Klugii.* The antennæ have the second joint hardly shorter than the third and this and the following subequal, joints 1-4, are of light yellowish, the rest of brown color, joint 3 of the maxill. palpi is of dark, the remaining ones and the labial palpi of pale yellowish, color. The labrum is square, entire, and, with the rest of the mouth, brown. The mandibles are furnished with 3-4 small teeth below the middle. The ligula is broader than in any of the other species. The thorax, besides in shape, is distinguished by having the foveæ removed from the basal angles towards the centre. The elytra are impressed with seven distinct striæ on either side, the first of which runs down to the apex where it falls in with the inframarginal one, the rest decrease in length towards the margin and in depth towards the apex, beyond the seventh another one is just traceable, beyond this there is a deep inframarginal one. The apex is impressed with the semicircular figure which distinguishes all the species here enumerated, with the exception of *B. opulentum* and *truncatum.* The color of the insect is a dark bright metallic green variegated with four large yellow spots on the elytra; two of these are near the shoulder and of oval shape, the other two near the apex and oblique; the apex is of a dirty yellowish color. The lower part of the insect is of pitch color, lighter towards the apex, the legs are yellowish, darker towards the base.

### 61. Bembidium emarginatum. *N.*

B. ovatum, convexum, piceum, capite dilutiore, elytris ante apicem maculis 2 rufo-flavis, subtus brunneum, pedibus, antennarum basi palpisque testaceis; long. corp. 1 lin.

Capite antice fortius acuminato, fronte utrinque profunde pluries sulcata, oculis mediocribus prominulis, *labro profunde subangulate emarginato*, antennis art. longitudine subæquali; thorace breviter cordato antice posticeque truncato, non emarginato, basi quadrato foveis basalibus lineaque longit. media fere obsoletis, linea basali latitud. tamen distincta; elytris ovatis juxta suturam utrinque 2-striatis, stria externa basi apiceque abbreviata, ante et infra medium puncto obsoleto impressis, ante apicem macula orbiculari rufo-flava apiceque sordide obsoleteque testaceis, hic semilunariter et infra marginem stria profunda impressis.

Variat colore dilutiore. In prov. occid. rarum.

This and the two remaining species are allied to each other, and probably belong to the subgenus *Lopha*. However, I am less sure of this with regard to the present species than with regard to the two following.

The head is pointed in front, and the labrum—an unusual occurrence—deeply notched. Two deep furrows run from the clypeus straight across the forehead to the vertex, and from their base other smaller ones radiate towards the eyes. Joints 2-5 of the antennæ, which, in almost all cases, are of unequal length, are not so in the present; the first two or three joints are yellowish, the rest are brown. Joint 3 of the maxill. palpi is dark, the remaining ones and the labial palpi yellowish. The elytra are impressed with two striæ on either side of the suture, the remaining ones are just traceable. The one next to the suture goes straight down to the apex, where it falls in with a deep inframarginal furrow; the second is as usual, abbreviated. The apex is impressed with the semicircular figure, and there are two punctures on either side.

### 62. Bembidium ornatum. *N.*

B. ovatum, subconvexum, brunneum, elytris maculis 4 flavis, pedibus, antennis palpisque pallide testaceis, long. corp. 1 lin.

Præcedenti simile, prætercolorem facillime tamen distinguendum corpore graciliore, fronte utrinque 2-sulcata, labro integro, elytris infra humeros et infra marginem utrinque macula orbiculari flava, punctis nullis.

Variat colore obscuriore et dilutiore et sæpius apice sordide testaceo. In prov. occid. commune.

Easily distinguish from the preceding species with which it agrees in all other respects; no striæ are, however, traceable

upon the elytra between the two near the suture and the inframarginal furrow.

### 63. BEMBIDIUM SCYDMÆNOIDES. *N.*

B. ovatum, convexum, obscure brunneum, elytris maculis 4 magis minusve obsoletis dilutioribus, pedibus, palpis antennarumque art. 2 primis testaceis, his apice reliquisque obscurioribus; long. corp. 1 lin.

Præcedenti simile, corpore robustiore, fortius ovato magisque convexo, thorace basi fortius quadrato facillime distinguendum.

In prov. occid. communissimum.

## VIII. MEGARISTERUS, *n. g.* *N.*
Fam. CARABIDÆ.
Trib. HARPALIDÆ.

Corpus oblongum, depressum, glabrum. Caput mediocre antice obtusum. Mentum profunde subquadrate emarginatum, edentatum, lobis extus rotundatis apice acuminatis. Ligula minima oblonga paraglossis magnis connatis eam totam amplectentibus antice rotundatis subcordate emarginatis. Palpi maxill. art. ultimo subcylindrico apice magis minusve angustato truncato, lab. eodem obovato truncato. Labrum transversum antice posticeque angustatum, margine anteriore profundius emarginato setoso. Clypeus emarginatus. Mandibulæ validæ trigonæ apice leviter arcuatæ, dextera mediocri labra obtecta apice acuminata medio 1-dentata, sinistra robustiore porrecta (hinc n. g. Megaristerus) apice obtusa medio 2-dentata. Antennæ humeros parum superantes, filiformes, art. 2° sequente parum breviore, reliquis subæqualibus. Thorax rotundato-cordatus, postice angustatus angulis rotundatis, antice leviter emarginatus angulis distinctis. Elytra parallela apice rotundata. Pedes ut in g. Acupalpo tarsis maris 4 ant. tamen 1° subtus nudo.

Victus Harpalorum.

Apparently closely allied to *Amblystomus*, differing, however, in the sculpture of the tarsi, the antennæ, labrum and palpi, and, as in the diagnosis given by Lacordaire in his *g. d. Col.* the paraglossæ of *Amblystomus* are simply said to be rounded in front, a further distinction would appear to reside in the notch which exists in that part of the paraglossæ of my genus *Megaristerus*. Also allied to *Acupalpus* the sculpture of the tarsi being exactly the same; in saying which I bear particularly in mind that the intermediate ones of the male are hardly dilated. From this genus however, it is effectually dis-

tinguished by the shape of the ligula. From both *Amblystomus* and *Acupalpus*, the present genus moreover differs in the *vesture* of the four ant. tarsi of the male, *the first joint being naked below* and in the mandibles, the left one of which is much larger and plumper than the right one, protruding from under the labrum, whilst the latter is hidden by it, the former is at the same time obtuse at the apex whilst the latter is pointed. In the *M. Indicus* this peculiar construction is hardly striking, but in the other two species it is very noticeable, and imparts a curious appearance to the head of the insect.

### 64. Megaristerus mandibularis. *N.*

M. piceo-niger leviter metallescens, subtus brunneus, antennis, tibiis tarsisque testaceis, ore brunneo; long. corp $1\frac{1}{2}$-2 lin.

Capite inter antennas 2-foveolato, mandibula sinistra robustissima porrecta, dextera mediocri labro obtecta; thorace basi 2-foveolato, linea longitud. utrinque abbreviata media diviso, antice lunate impresso; scutello majore; elytris obsolete striatis, striis juxta suturam distinctioribus, cum thorace parce subtiliterque punctulatis, inter med. et apic. ad striam $2^m$ puncto impresso.

Prope Colombo rarus.

### 65. Megaristerus stenolophoides. *N.*

M. brunneo-piceus elytris obscurioribus metallescentibus maculis 4 flavis, margine suturæque apice brunneis, pedibus, antennarum basi palporumque apice pallide testaceis, ore, mandibulis brunneis exceptis, testaceo; long. corp. $1\frac{1}{2}$ lin.

Præcedenti similis corpore robustiore minus depresso et colore facile tamen distinguendus. Differt præterea palpis max. art. $4^o$ minus distincte, lab. eodem fortius truncato; thorace magis transverso basi obselete ruguloso; elytris profundius striatis, puncto ad striam $2^m$ fere obsoleto, com thorace haud punctulatis, maculis 4 subobliquis flavis: 2 humeralibus in interstitiis 5-6, 2 subapicalibus in interstitiis 3-4.

Prope Colombo rarus.

### 66. Megaristerus indicus. *N.*

M. obscure viridi-æneus elytris maculis 2 humeralibus obliquis pustulisque 2 subapicalibus flavis, subtus brunneus tibiis tarsisque testaceis, antennarum basi oreque brunneo-testaceis; long. corp. $1\frac{1}{2}$ lin.

Differt a M. mandibulari mandibula sinistra altera vix robustiore, elytris infra humeros inter marginem et striam $2^m$ macula obliqua intus

augustata ante apicem in interstitio 3° postula parva flavis, apice fortius quam in præcedente rotundatis.

Prope Colombo mihi, Maderaspatani a Dam. Hon. W. Elliott specimina nonnulla nocte ad lumen capta.

### IX. Spathinus, *n. g.* N.
### Fam. Carabidæ.
### Trib. Pogonidæ.

Corpus obovatum, sub convexum, glabrum. Caput mediocre antice trigonum, oculis magnis semiglobosis prominulis, collo brevi. Mentum transversum profunde quadrate emarginatum, dente sat forti acuto, lobis intus inter med. et apicem leviter oblique truncatis, extus rotundatis, apice acuminatis. Ligula minuta elongata, paraglossis latis connatis eam haud multo superantibus apice intus oblique truncatis subacuminatis. Palpi art. ultimo conico acuminato, max. art. 3° inverto ultimo æquali, lab. eodum robustiore. Labrum quadratum antice profunde emarginatum angulis ant. rotundatis. Mandibulæ porrectæ trigonæ apice acuminatæ basi dentatæ. Antennæ sat robustæ humeros parum superantes art. 2-3 subæqualibus, obovatis. Thorax transverse subquadratus antice lateribus leviter rotundatus, angulis subrectis. Elytra ovata apice rotundata. Pedes anteriores tibiis profunde emarginatis, tarsis moris art. 1-3 leviter dilatatis subtus squemulis munitis, art. 1° subcylindrico 2-3 subrotondatis, 4° subtrigono, unguiculis simplicibus.

Victus Bembidiorum.

Apparently closely allied to *Trechus* and an aberrant form of the same tribe to which the latter genus belongs. The mentum and palpi appear to agree entirely. The insects differ, however, in the structure of the ligula (which in *Spathinus* is entirely that of a *Bembidium*), and the sculpture and vesture of the ant. male tarsi. In spite of the latter anomalies, the preeminently characteristic shape of the palpi convinces me that the insect must find a place where I have put it. It is also closely allied to my genus *Ochthephilus*, differing from it, however, in the ligula, palpi and labrum. The generic name "*Spathinus*" signifies 'a staggard,' and I have chosen it with regard to the shape of the terminal joint of the palpi. The insects are common throughout the South-West and West of the Island, where they live in the manner of the *Bembidia*, under decaying vegetable matter, upon the banks of lakes, and rivers, &c.

### 67. Spathinus nigriceps. *N.*

S. Alatus, tenuiter hirsutus, brunneo-testaceus, capite nigro, elytris apice fuscis, ore, antennis pedibusque testaceis ; long. corp. 1½ lin.

Capite inter antennas profundius 2-foveolatus, fronte medio leviter depressâ ; thorace lævi linea longit. media diviso ; elytris juxta suturam obsolete striatis.

### 68. Euplynes Dohrnii. *N.*

E. ovatus, subconvexus, rufo-testaceus, oculis nigris, elytris viridibus, femoribus apice tarsisque geniculis fuscescentibus ; long. corp. vix 4½ lin.

Capite inter antennas bifoveolato ; antennis art. 2° brevi, reliquis subæqualibus ; palpis art. ultimo sub-elliptico truncato, labialibus elongatis ; thorace breviter transversim cordato antice posticeque truncato, longitudine sesqui latiore, depresso, lateribus basique elevato, hic leviter bifoveolato, angulis basalibus subrectis leviter rotundatis, linea med. ongitud. diviso, subtiliter transversim ruguloso ; elytris ovatis leviter dilatatis thorace duplo fere latioribus, striatis, in regione basali in stria 3ª, ad et infra medium in stria 2ª puncto impressis, in regione media utrinque depressis ante apicem leviter angustatis et sinuatis, apice levissemi transversim truncatis angulo interno in spinam producto ; pedibus tibiis fortiter tarsisque 4 posticis dorso modice costatis.

In campis silvisque prov. occid. et in montibus prov. central. usque alt. 4000 ped. sub vegetab. per occasionem copiose legi.

This insect frequents localities of a very different nature : I have taken it in great abundance in the Negombo district in hot, sandy, fields, under heaps of weeds, &c.; but I have also taken it on the banks of the Colombo lake, and in the damp forests of Pusselláwá, 4,000 feet above the sea, under fallen trees. Its favourite haunt, however, appears to be the former description of locality. It would appear to be very distinct from the *E. Cyanipennis* described by Schmidt-Gœbel in his "Col. Birm." in thorax, sculpture of apical part, and position of punctures of elytra, costated four post. tarsi, &c. On the other hand the curious depression of the elytra, which has much the appearance of being accidental, is the same. It occurs also in my genus *Anchista.* I am not quite satisfied with the description of the ligula and tarsi as given by Schmidt-Gœbel. The former I should call "truncated at the apex, anterior

angles strongly rounded off." In the insect before me it is certainly not rounded in the middle : if anything, it is rather the contrary. The tarsi I should describe thus :—"Joints 1—4 of two ant. male tarsi dilated ; joint 1 nearly as long as the two following together, sub-cylindric ; joint 2 nearly as long again as the following, elongate-trigone ; joint 3 sub-trigone ; joint 4 (in all tarsi) bilobed ; joints 1-3 furnished below with two series of lamellated papillæ fenced in by bristles ; joint 4 densely penicillated ; claws simple."

I take this opportunity to add a general remark. The author above quoted at the end of the description of his *E. Cyanipennis*, quotes a passage from Helfer's Burmese Journal, implying that the species lived exclusively upon trees, and *that most of the Carabidæ of that country had the same habit.* The latter part of this observation I feel inclined to look upon as a rash and unjustifiable assertion on the part of Helfer. There can be little doubt (and the above is an additional example) that the *Carabidæ* of this Island have much resemblance to those of Burma. Still my long experience in it has not furnished me with any instances of any of them living *upon trees*, with the exception of the *Tricondylæ*, *Collyres* and certain *Cicindelæ*. The *Casnoniæ* and *Ophioneæ* are in the habit of ascending grasses and low herbs, and certain *Lebiidæ* and genus *Catascopus* live under the bark of trees. This is all As to the insect described above, although it appears to adapt itself with facility to a variety of physical circumstances, and although it takes occasionally to its wings and flies into houses in the evening, I have never found it *upon trees*.

# NEW AND LITTLE KNOWN SPECIES OF CEYLON NUDIBRANCHIATE MOLLUSCS, AND ZOOPHYTES.

By E. F. Kelaart, M.D., Staff Surgeon, F. L. S.

Having, in the course of my Military service, been now for the third time stationed in Trincomalie, in Medical charge of the European Troops in that Garrison, and still finding that there is nothing like the careful study of God's works to divert the mind from the contemplation of diseased organic bodies, especially in this unhealthy and monotonous station, I have again resumed the researches of my leisure hours, which never fail to draw from me an earnest prayer that my health may be spared long enough to conclude these labours in this and other parts of the Island.

A recent visit to England made me acquainted with the value of the aquarium, and with the interesting researches of Messrs. Alder and Handcock, of Gosse, Johnson, and others, among the soft, gelatinous, marine animals found in European seas, which have been so much neglected by Indian Naturalists, owing to the difficulty either of observing their natural habits, or of preserving their forms. The curiosity thus excited was immediately increased, when, after several years absence, I was again in sight of the magnificent harbour and bays of Trincomalie. While some of my Ceylon friends contemplated my return to Trincomalie as a great evil, I became reconciled to my destination from an inward feeling—and I hope not an unworthy one—that I was again sent here, for a good and useful purpose.

It is now nearly two years since I returned to Ceylon, and I have every reason to feel thankful, that my residence in Trincomalie

has enabled me to prosecute researches in more than one unexplored field of Natural History. I had for my guide the example of those great and good men, who deign to look upon even my labours as worthy of encouragement, and who do not consider the pursuit of the Naturalist as incompatible with the duties of a Military Surgeon. Dr. Johnson, himself a successful Medical practitioner and zealous Naturalist, (in his celebrated work on British *Zoophytes*,) observes, in his remarks on Doctors who are also Naturalists, that "that very activity of mind and perspicacity which originated and upheld their sagacity and success as practitioners, were sure to carry them far in whatever side-path the natural bent of their taste led them, for the occupation and entertainment of the leisure hours which the *busiest must have, or may create. Idleness has no leisure.* * * * There never was a time when it was necessary to vindicate, to any but the ignorant, the erratic excursions of medical men into the fields of science and literature ; for assuredly the rank which the profession, as a body, has taken and holds in public estimation, depends for its patent, in part at least, on the scientific and literary character of its professors ; and by continuing to support that character they will best secure it from the vulgarity of a common mercature, or the selfishness of a venal quackery."

My earliest researches, since my return to Ceylon, were directed (with the aid of the microscope) to those minute forms of animal and vegetable life called animalculæ, and *Diotomaceæ.* I have already communicated to another channel the observations I have made among these interesting microscopical creatures, found in fresh and sea water. In this paper, I propose to communicate to the Ceylon Branch of the Royal Asiatic Society, my researches among some of the least known, but most interesting, species of marine animals.

Finding that scarcely anything is known of the many naked Molluscs of this part of the Indian Ocean, I have availed myself of the present favorable opportunity offered by the Ceylon Government, for the investigation of the Natural History of the Pearl Oysters, to extend my researches also to a numerous family

of *Mollusca* inhabiting these seas, which though not productive of pearly gems, or affording specimens for cabinet collections of Conchologists, or of amateur collectors, have attracted considerable attention in Europe, more especially since the publication of the splendid work of Alder and Handcock on the British *Nudibranchiata.*

The marine shells of Ceylon have long been known to the Naturalist, and they are also familiar to many in Ceylon, but the soft sea nymphs, or slugs, whose perishable charms often rival the more lasting beauties of the finest shell, had scarcely ever been noticed by any Naturalist or friend in the Island, till I had placed these creatures in the Vivarium. They have not only afforded amusement and instruction to myself, but, I hope, to others also, who have frequently seen these interesting creatures in their new homes. I must confess that some of my visitors were disappointed at the slimy nature of these animals, and failed to appreciate the beauty of many of my pet specimens. Others, however, more alive to the beautiful and to the wonderful works of God, did not despise the sea-born slugs, because they were so snail-like in appearance, and, like the land slugs, destitute of shells. Even the native shell divers, who procured me most of the living specimens, expressed their astonishment at the newly unfolded beauties of these "*Aḍḍai*,"* or slugs, which they found crawling on rocks and sea-weeds; but it was not till the full formed *Doris*, or the sweet little *Eolis*, expanded their tentacles and plumose gills in the glass Vivarium, that these 'men who go down to the deep' became aware, that the creatures which they so much despise are among the most elegant objects of the sea, and that, although a shell will preserve its colour for an almost indefinite period, the rich and variegated colours of these semi-gelatinous creatures, though shorter lived, are not less charming, or less worthy of admiration. It may, therefore, be hoped, that the interest recently created will continue to be attached to the naked *Mollusca* of Ceylon, and, that, in a few years, they will be as well known to

* T அட்டை 'sea-slug.'

the Naturalist as the European species. Although it may be long before we shall find an Alder or a Handcock to pourtray gracefully, and faithfully record their characters and habits, still it will always be gratifying for me to feel, that I was the pioneer to the labours of others more competent to do justice to the Ceylon *Nudibranchiata.*

It has always been my endeavour, (though, I must own, often unsuccessfully,) to describe in familiar language to my friends in Ceylon, the Natural History of animals found in the Island, and therefore, if I have not attained this object in the following pages, it will not be from the want of a wish to impart to others some of the pleasure I have derived in such congenial pursuits or from the absence of a desire to be amusing as well as instructive.

Popular accounts of the Natural History of a country generally follow a scientific one. But I shall endeavour to combine both in one communication, for I cannot but suppose that, among many inquirers, there will be found even a few who are anxious to dive deeper into the characters of an animal than its colour or form. Having this object in view, I cannot introduce the following descriptions of sea slugs, or sea nymphs, by a more intelligible and useful preface, than an abridged description of the Anatomy and Physiology of the Class *Nudibranchiata,* given in the English Cyclopædia ; promising, in the course of my own descriptive account of the species found in Trincomalie, to detail faithfully their habits and characters.

## NUDIBRANCHIATA.

A family of *Gasteropodous Mollusca*, characterised by the possession of distinct, external and uncovered gills. The species of the family are all marine, and with few exceptions small in size. They are sometimes, with other forms of animals, called sea-slugs, arising from the fact that, like land slugs, they are destitute of shells. Their body is usually elongated and soft, and attached throughout its whole length to the foot, or disc, upon which they crawl. They are not unfrequently covered with a cloak, which in some is strengthened with calcareous spicula. The head is anterior, and frequently indistinct, having one or two pairs of tentacles, the upper pair of which are placed on the cloak when it is present,

and behind them the eyes are situated. But the characteristic peculiarity of these Molluscs is the appendages that constitute their breathing organs, placed upon the back, always symmetrically, in plumes, tufts or papillæ, either forming a circle on the central line, or arranged in rows upon the sides.

None of the Nudibranchiate *Mollusca* appear to have been known to the ancients, and even up to the time of Linnæus they remained, with one or two rare exceptions, entirely unnoticed. It was not until the appearauce of the celebrated "*Memoires*" of Cuvier, in the *Annales du Museum*, that much attention was drawn to this subject. Since then, Lamarck and Blainville contributed something to the knowledge of their physiology and relations, but not much to the number of species.

Although little had been done up to this time by British Naturalists in augmenting the species of this beautiful family, they have been, since, the subjects of most accurate and fruitful research; and the monograph now publishing by the Ray Society, on the "British Nudibranchiate Mollusca," may be regarded as one of the most remarkable contributions made to the literature of Natural History during the present century. Continental naturalists have also added several new European species during the last half century.

With the imperfect knowledge of foreign species that we yet possess it is scarcely possible to arrive at any satisfactory conclusion concerning the general distribution of the *Nudibranchiata* in the different regions of the globe. The tropical forms are, as usual, larger and more brilliantly coloured than those of colder climates, but the notices of extra European species are so scanty, that we cannot form any idea of their numerical preponderance. * * * * It cannot be doubted that a great deal of the apparent deficiency of other genera, in comparison with the *Dorididæ*, in foreign countries, arises from the want of proper examination, and from the little attention paid by collectors to the less conspicuous forms.*

In 1841, the celebrated Naturalist, M. Sars, announced the discovery, that these little creatures undergo a metamorphosis, having on their extrusion from the egg a very different form and character from those which they are afterwards destined to assume. In this first stage of their existence, they have the appearance of small animalcules, swimming freely through the water by means of two ciliated lobes, and have their body covered by a nautiloid shell furnished with an operculum. Up to

* Having paid this attention to "less conspicuous forms," I am enabled to add considerably to several genera.—E. F. K.

that time nothing approaching to a distinct metamorphosis had been known to exist in any of the true Molluscs.

The *Nudibranchiata* exhibit a high state of organization. They are all provided with a powerful muscular buccal apparatus, which has, in some instances, appended to it a gizzard. The oral aperture is guarded by fleshy lips, and the mouth is furnished with a tongue, bearing a spiny prehensile membrane, and occasionally with lateral corneous jaws.

The œsophagus, stomach, and intestines are well marked ; the former is generally short, and passes from the upper surface of the buccal mass. The stomach is frequently buried in the liver. The intestine is always short.

The liver presents two great types of form. In the *Dorididæ* and *Tritonidæ* it is entire (excepting in *Scylleæ*, where it is broken up into 6 or 7 globular masses), occupying its normal abdominal position ; in the *Eolididæ* it is more or less diffused.

All the Nudibranchs are hermaphrodites, each individual being furnished with male, female, and androgynous parts. These organs, taken together, are very bulky, and occupy the greater portion of the abdominal cavity. They communicate with a common vestibule, opening upon a nipple-like process on the right side of the body, and always below the mantle, when it is present.

The organs of circulation and respiration consist of central organs of propulsion,—a systematic and portal heart,—arteries, veins, and sinuses or lacunes ; and of laminated, branched, or papillose branchiæ ; arranged either on the medial line, or along the sides of the back. The flow of blood is rapid ; the pulsations of the heart varying, in the different species, from 50 to 100 in the minute.

The nervous system presents a high degree of concentration, perhaps higher than in any other group of *Mollusca*,—and is divided into two very distinct portions :—one, the cephalic or excito-motor ; the second, the splanchnic or sympathetic ; these two portions intercommunicate at several points.

All the Nudibranchs are provided with auditory capsules. Eyes are also universally present. The dorsal tentacles are the organs of smell, and, judging from their great development, this sense must be more acute in most of the Nudibranchs than it is in any other Mollusc, with the exception perhaps of *Nautilus*. Touch undoubtedly resides everywhere in the skin, but it is specialised in the oral tentacles and parts about the mouth. The lips and channel of the mouth are probably the seat of taste.

Their ten city of life, when kept in confinement, varies much in the different species, but is greater than in many other marine animals.

Though patient and long-suffering in the endurance of hunger, they are very voracious. The greater number of them are carnivorous ; living principally upon Zoophytes and Sponges. The Eolides do not scruple occasionally to devour the weaker among their own brethren.—*Abridged from English Cyclopædia.*

Hoping that the foregoing anatomical and physiological account of the *Nudibranchiata,* will draw more than ordinary attention to this family of marine creatures (found on almost every rock and sea weed), I shall proceed to give a descriptive account of upwards of a hundred species of marine-animals, including Sea-anemones and *Planaria,* found in the harbour, bays, and coves of Trincomalie. I cannot but regret, that not having with me Ruppel and Ehrenberg's work on species found in the Red Sea, I am not able to speak positively of *all* those herein described as being new to science. Some may, perhaps, have already been described by earlier observers, which, if ascertained to be the case, I shall only be too glad to take the earliest opportunity of acknowledging.

In concluding these prefatory remarks, I have to express my personal obligations to those authorities who have retained my military services in Ceylon, thereby enabling me to resume my Zoological labours, which were precipitately and unexpectedly shortened by my removal from the Island.

*Trincomalie,*
*1st November, 1857.*

# CEYLON NUDIBRANCHIATA MOLLUSCA.

(NAKED MOLLUSCS.)

---

| | |
|---|---|
| Sub-Kingdom. | MOLLUSCA. |
| Class. | GASTEROPODA. |
| Order. | NUDIBRANCHIATA. |
| Fam. | DORIDIDÆ. |

Branchial plumes surrounding the vent on the medio-dorsal line.

| | | |
|---|---|---|
| Sub-Family. | DORIDINÆ. | With a cloak. |
| Genus | DORIS. | *Linnæus.* |

Animal oblong, covered by a mantle ; four tentacles, two superior or dorsal, clavate or conical, retractile within cavities, sometimes slightly sheathed. The two inferior or oral tentacles placed on each side of the mouth, sometimes absent or replaced by flat appendages ; eye specks immersed behind the dorsal tentacles, not always visible in the adult ; lingual membrane with numerous lateral teeth ; rachis often edentulous ; stomach simple ; liver compact ; skin strengthened with spicula, more or less definitely arranged.

---

DORIS GLORIOSA. *Kel.*

Synonym. DORIS MARGINATA ? *Leuckart.*

Body nearly 3 inches long ; oblong, of a pinkish colour minutely dotted with red and white. Mantle large, oval, broad, when expanded entirely covering the foot. Back mottled with pink, red and yellow, and minutely punctulated with red and

yellow, edged broadly with white, then by a rich broad red line ; adjoining this is a whitish space, and carried round the mantle, near the body, is a still more brilliant blood red line, with internal club-shaped prolongations of the same beautiful purple red colour. Interspace and for about a quarter of an inch of breadth of the back, the mantle is again whitish, with shades of purple and yellow nearer the beautifully mottled back. The underside of mantle has also a broad white edge, the rest brilliantly variegated with dotted purple, yellow and red splashes. Branchiæ 7 or 8, large, branched ; each rising from a separate cavity in a circle about half an inch from a protruding yellow coloured anal orifice. Plumes roseus, with red midribs. Dorsal tentacles large, clavate ; apex pointed, slightly truncated, on inner edge laminated ; colour pinkish and spotted yellow ; ridge of cavity spotted with yellow and red. Head large, protruding nearly three-quarters of an inch from mantle. Mouth near foot, situated in the centre of an oval projection, and on each side a long broad toothed leaflet or oral appendage, red and dotted like the head. Foot long, broad, with parallel sides, rounded and transversely split in front. It has a broad lemon coloured edge with transverse striæ ; the rest pinkish red, not spotted ; a dark purple spot in centre given by the internal viscera.

This is by far the most beautiful species of *Doris* or sea nymph I have ever seen, and none but a good artist could do justice to its resplendent beauties. The large ample surface of the mantle, with its soft, snowy white undulating edge, is best seen when the animal is swimming, and reflecting in the water the rich red folds near the golden speckled back, on which is placed a broad circle of rosy coloured feathery tufts. The live specimen, of which the above is but a faint description, was found under corals in low water near Fort Frederick. In another specimen from the same locality, the white edge of the mantle was replaced by a rich crimson red, which coalesced with the inner red line, leaving a faint white line. Indeed, it is a question which of the two varieties looked more beautiful ; at night, however, the palm of beauty was awarded to the red margined specimen. They both lived for some days in

a vivarium. When at rest, the mantle was turned inwards towards the back ; in this position the white and red lines were hidden by the broad rolls on each side, displaying the rich profusion of red and yellow dotted splashes and undulating lines of the under surface of the mantle. In fact, it then looked like another species, but it is only when the mantle is fully expanded and floating on the water, that the unrivalled charms of this beautiful sea nymph is seen to perfection. In the young, the mantle extends round the head, and may be mistaken for a distinct species. I have not had an opportunity of seeing the spawn of this species.

If this splendidly coloured sea nymph is identical with Leuckart's species, found in the Red Sea, and named *Doris marginata*, I should still prefer retaining the name I have given it, as "*marginata*" would apply, equally as well, to several other species as to this.

## Doris MacCarthyi. *Kel.*

Body nearly 2½ inches long ; dusky grey. Mantle long, narrow, dusky grey ; bordered with a bright blue line ; edge crenulated, wavy. Dorsal tentacles long, conical, obtusely pointed ; laminated obliquely, for nearly two-thirds of its length ; of a pale blue colour with white streaks. Oral tentacles white, short, broad and rounded. Branchial plumes 12 to 15 ; irregular, most of them of unequal length ; pinnated, and a few trifurcated ; others have a small cluster of plumes rising from the middle or extremity. Foot white, and nearly as long as the mantle.

This curious, but elegant species is semi-gelatinous ; and resembles a *Goniodoris* from its narrow mantle, which scarcely covers the foot ; the body is almost exposed.

I have dedicated this beautiful species to one who has always encouraged my pursuits in the field of Natural History. To Sir Charles MacCarthy, the Colonial Secretary of Ceylon, I feel grateful for that assistance which his position in the Island enabled him to give me, whenever required ; and I also feel

thankful to him for the warm interest he has taken in my employment as Naturalist, to investigate the Natural History of the Pearl Oysters, which has so abruptly been brought to a conclusion by my professional services being required in another part of Her Majesty's dominions,—the rebel polluted land of India.

### Doris cœlestis. *Kel.*

Body white, $2\frac{3}{4}$ inches long; flattened. Mantle coriaceous, white, clouded with dark purple minute rings, confluent or continuous with lighter coloured purple rings, set more widely apart. Dorsal tentacles white, long; apex clavate, lamellated, slightly truncated on the superior edge; pale green, tipped with orange; margin of sheath orange or golden. Oral tentacles long, acutely pointed; white, minutely speckled with purple. Branchial plumes 6, long, tripinnated; whitish, ribs purplish brown, edge of cavity orange. Foot white, shorter than mantle; grooved; lower lamella notched.

This beautiful purpled clouded *Doris* is of very retiring habits; scarcely ever seen moving. Obtained in August and September from rocks in Back Bay. Ova white, in three or four broad coils.

### Doris funebris. *Kel.*

Body nearly $1\frac{3}{4}$ inch long; oblong, convex; of a waxy white colour, and spotted black. Mantle coriaceous, granular; of an ivory white colour, and ornamented with jet black spotted circles and half rings or imperfect annular spotted figures. Dorsal tentacles large, clavate; apex black, laminated, without sheaths. Oral tentacles linear; white, tip black. Branchial plumes 6, large and drooping, tri-pinnate; white and shaded lavender grey; midribs of a dark brown colour. Foot waxy white; spotted irregularly on the margin of edges with small and large linear spots.

This elegant funereal looking *Doris* is, with the mantle, about $2\frac{3}{4}$ inches long, and $1\frac{1}{2}$ broad. Rarely seen. Lives for a long

time in the aquarium. Deposits its ova in broad convoluted bands, which, when uncoiled, measure nearly 18 inches in length. A pair kept in the aquarium were seen to spawn in July. While one was depositing the band of ova on the side of the glass globe, the other kept watch, as it were, by moving in a circle round the former. The whole process lasted about half an hour.

The spots and markings of some specimens were of a dark brown colour. In others the spots were of an auburn colour.

### Doris Gleniei. *Kel.*

Semi-gelatinous. Body nearly $1\frac{1}{2}$ inch long. Mantle broad, shorter than foot,—above, white, with a pinkish yellow shade ; a large irregularly waved deep golden coloured patch on the back, bordered and spotted with purplish red. The under surface of fore part of mantle, of a beautiful light purple colour. There is also a purple line on each side of the white body. Dorsal tentacles white, with golden coloured laminæ ; long, conical and pointed. Oral tentacles short, white. Branchial plumes 7 to 9, short, lanceolate, pinnated ; white, bordered with golden yellow. Foot pinkish white ; edge pure white.

This beautiful species I have named after my friend the Rev. Owen Glenie, Colonial Chaplain of Trincomalie, who was often the cheerful companion of my zoological pursuits, and who will, I hope, on my departure from the Island, continue those researches which he has so well begun.

This is perhaps next to *Trevelyana Zeylanica* (*n. s.*) and *Doris Gloriosa*, the most remarkably coloured species in Ceylon. Found in the Inner Harbour in deep water, as also at Kottiar, opposite Fort Frederick.

### Doris leoparda. *Kel.*

Body $\frac{7}{8}$ inch long, grey spotted. Mantle carneous, granular ; grey, and spotted with dark grey and blackish circular spots ; the latter in the central parts ; each spot composed of smaller spots, separated from each other by white reticulations, seen

more distinctly with the aid of a magnifier. Dorsal tentacles green ; large, broad, ovate, lamellated for nearly the whole length. Oral tentacles short, linear, acutely pointed. Branchial plumes 6, grey, speckled with darker grey, all united for nearly half the length ; the other half fringed with short plumes of a light green colour. Foot whitish, speckled ; covered by mantle

This Leopard-spotted *Doris* is of a regular oval form. Found in Dutch Bay among coral rocks.—Ova white.

DORIS AMABILIS. *Kel.*

Body 4 lines long, oblong, narrow, convex, white, spotted purple on sides. Mantle smooth, white, and spotted with purplish crimson spots ; beneath white, not spotted. Dorsal tentacles of moderate length ; apex conical, pointed ; closely lamellated ; of a golden yellow colour. Branchial plumes 5 or 6, small, bi-pinnate ; white, with purple spots at their base. All retracted within a cavity, without a rim. Head rounded, spotted purple, on each side of mouth a short linear tentacle, white. Foot narrow, longer than the mantle, slightly expanded in front, spotted purple on the upper surface.

This lovely little *Doris* is rarely found. Two specimens, obtained in May, are still alive in a finger glass, generally resting on the side of a stone. At night they crawl out of their hiding place and creep along the sides of the glass, and are sometimes seen floating on the surface of the water on their back. When touched with a feather they adhere by their foot, and can be kept dangling in this position by the aid of the mucous thread secreted by the surface of the foot. Several *Eolidæ* were kept in the same vessel, and they have survived them all, though attacked repeatedly by the *Eolis*. Ova white, deposited on side of glass in a thread-like coil.

DORIS FIDELIS. *Kel.*

Body $\frac{2}{3}$ inch long ; narrow, convex ; white. Mantle oblong, with parallel sides ; shorter than the foot ; of a waxy white colour, the edge lined with red and irregular tooth-like transverse

internal prolongations of the same colour; those on sides, longer, alternated with short ones. Branchial plumes 7 or 8, black; lanceolate, pinnated, few branched at tip. Dorsal tentacles oblong, flattened, pointed; apex black, lamellated. Oral tentacles small, acutely pointed. Foot white, narrow, slightly dilated in front, and pointed posteriorly.

Found on coral rocks at low water mark, in August and September. This singularly marked species looks, when the tentacles and branchiæ are retracted, like a large bean. Its jet black plumes and tentacles appear very conspicuous above the red margined white mantle. It is very tenacious of life. Ova deposited in narrow white coils.

DORIS PRECIOSA. *Kel.*

Body white, $\frac{2}{3}$ inch long. Mantle pale greenish yellow, very light coloured on sides, where there is also a blueish shade; closely speckled with small reddish-brown spots; margin marked with a narrow purple red line and a light orange shade. Dorsal tentacles short, with reddish-purple apex, clavate, laminated. Oral tentacles triangular, sharp pointed. Branchiæ short, pinnated; reddish-purple. Foot white, shorter than mantle.

This gem-like elegant species, is of the same size as *D. Fidelis*, and not unlike it in appearance. The deep blood-red branchial plumes, and the red margined speckled cloak, sufficiently separate it from the last species. They are both found in the same locality, and at the same time. The characters of the young species are also very marked, as in the adult specimens.

DORIS NIVEA. *Kel.*

Body $\frac{2}{3}$ inch long, convex, elliptical, snowy white. Mantle coriaceous, granular; white, occasionally seen speckled indistinctly with small grey spots. The purplish coloured viscera seen through the opaline back. Dorsal tentacles pure white, short, conical, pointed slightly, lamellated at tip. Oral tentacles linear. Branchial plumes 6 or 7, white, bi-pinnate. Foot white, shorter than mantle.

This snowy white opaline *Doris*, is probably only a variety of *Doris pallida* of Leuckart, found by Ruppel in the Red Sea. It has not, however, all its characters ; the cloak resembles that of *D. repanda* in some respects. It has white, nerve-like lines on the margin. I have only seen one specimen, which lived for a few days.

### Doris marmorata. *Kel.*

Body $2\frac{1}{2}$ inches long, oblong, convex, coriaceous ; white, speckled reddish-brown. Mantle broad and long, covering the foot; thick, hard, granular; marbled with black and reddish-brown, and irregularly spotted white. Under surface white, and mottled with irregular shaped purplish-red spots. Branchial plumes 6, united at base, superior half plumose, tri-pinnated, grey and grizzled with brown. Dorsal tentacles large, clavate, laminated ; brown and speckled white. Sheaths granular. Head small ; oral tentacles long, linear, acutely pointed. Foot white, deeply notched and grooved in front ; spotted reddish-brown.

This large marbled *Doris* lived only for a few days. They are found on rocks near Fort Frederick at low-water mark. Some are of a darker brown colour than others.

### Doris cerisa. *Kel.*

Body $\frac{1}{3}$ inch long, convex, oval ; of a vermillion-red colour. Mantle of a cherry-red colour, covering the foot. Branchial plumes 6 or 7 ; very small, straight and stiff ; bi-pinnated ; of a crimson-red colour. Dorsal tentacles small, conical, lamellated, purplish red ; speckled white, tip grey. Oral tentacles indistinctly seen. Foot pinkish.

I have only seen one specimen of this exceedingly pretty species. It lived for several months in a finger-glass. It cannot be mistaken for the young of any other Ceylon species herein described. Ova red, in six narrow tape-like coils. The ova of *D. rubra* (*mihi*) are white.

### Doris rufopunctata. *Kel.*

Body $\frac{3}{4}$ inch long, oval, compressed ; of a white colour. Mantle coriaceous ; of a light brick-red colour, and speckled with circular spots of a darker reddish-brown colour. Branchial plumes 5 small, bi-pinnate ; greyish, speckled rufous. Dorsal tentacles short, clavate, pointed, laminated, without sheaths ; of a rufous brown colour. Oral tentacles white ; linear. Foot whitish ; short, grooved and notched in front, speckled rusty. Under part of cloak whitish, and also speckled rusty.

This stiff-looking *Doris* is occasionally seen in a circular form. Rarely found, among Pearl Oysters ; very tenacious of life.

### Doris grisea. *Kel.*

Body $1\frac{1}{2}$ inch long, gelatinous. Mantle of a dark ashy-brown colour, closely speckled with reddish brown and white spots, and two or four longitudinal rows of larger blackish irregular spots. Tentacles clavate, laminated ; ashy-brown speckled white. Branchial plumes 5 whitish, speckled grey ; tri-pinnate. Mouth surrounded with a white veil (?) Foot whitish, spotted reddish-brown ; notched in the fore part ; covered entirely by the mantle. Some specimens are more reddish-coloured than others. The young are nearly always more ashy-coloured.

A very common species, found from March to September in low water, on rocks surrounding Fort Frederick, and also in the Inner Harbour. Lives a long time in the aquarium. Ova white, in three or four white coils. This *Doris* can elongate itself into the shape of a leech.

### Doris papillosa. *Kel.*

Body $\frac{3}{4}$ inch long, white, brown spotted. Mantle coriaceous, covered with large papillæ, each rising from a circular tubercular base, or ring. Buff, and spotted dark reddish-brown ; a row of larger spots round the margin. A dark brown line runs from base of tentacles to branchiæ. Dorsal tentacles

large, apex clavate, laminated, of a light green colour, speckled white. Oral tentacles short, linear. Foot whitish and spotted with rusty-brown ; shorter than mantle. Branchial plumes 6 ; short, tri-pinnated. Posterior three plumes rusty-coloured ; anterior ones whitish.

This species resembles *Doris rufopunctata*, but its green dorsal tentacles, and papillose tubercles on mantle, sufficiently distinguish it from other species. Ova white, laid in four narrow waved coils.

### Doris rubra. *Kel.*

### Syn. Doris solea. ? *Cuv.*

Body 1½ inch long, oblong, pellucid-red. Mantle crimson-red, and maculated with irregularly shaped dark brick-red or purple spots ; those on the back larger. Tentacles large, clavate; apex red, laminated. Branchiæ 6, of a light rose colour ; large, tri-pinnate. The two anterior ones smaller than the rest. Foot oblong, broad, of a pinkish-red colour ; longer than mantle; rounded in front and transversely grooved ; anterior lamina notched in centre. Oral tentacles linear ; mantle extended, nearly three inches.

This beautiful red species is found in great abundance in and out of the harbour of Trincomalie ; and is generally seen on mossy rocks a few feet below the surface of the water. When confined in a glass vivarium, it becomes, at night, nearly throughout, of a pellucid pinkish-white colour, which hue it retains till dawn, when gradually it assumes the brilliant red diurnal costume. Spawns in the months of May and June ; ova deposited in three or four large, white, ribbon-like convolutions.

### Doris osseosa. *Kel.*

Body 1 inch long. Mantle hard, cartilaginous, granular and pitted ; granules of a whitish colour ; on the median line is a narrow ridge extending from base of tentacles to branchial plumes, which are four or five in number, emerging horizontally

from under the posterior termination of dorsal ridge. In some specimens there is a large pitted protuberance on centre of ridge. Dorsal tentacles with large granular sheaths; apex conical, lamellated; of a pale green colour. Oral tentacles white. Foot small, narrow. Branchial plumes small, bi-pinnated.

This curiously formed *Doris* resembles a piece of bone, or piece of worm-eaten white stone. Its habits are those of the other *Doridæ*.

### Doris Constantia. *Kel.*

Coriaceous. Body $\frac{3}{4}$ inch long; light yellow. Mantle yellowish-brown, granular; dark brown spots on edge. Dorsal tentacles yellow, conical, swollen at the apex, laminated; tip produced, white. Oral tentacles small, linear. Branchial plumes whitish, five or six, small, bi-pinnate. Foot small, covered by the mantle. Under parts yellowish.

I have only seen one of this species, which lived for many months in a vivarium. It came nightly to one of the oysters, and apparently fed on the back of the shells, upon the atoms of life found there.

### Doris luteola. *Kel.*

Semi-gelatinous. Body $\frac{3}{4}$ inch long. Mantle granular, yellowish, and shaded with darker yellow. Dorsal tentacles long, black, lamellated apex. Oral tentacles short, white. Branchial plumes long, bi-pinnate, greenish. Foot white, shorter than mantle.

This elegant species is found in shallow water; spawns in October. Ova light green, in two narrow tape-like convolutions.

### Doris viperina. *Kel.*

Body 2 inches long; white. Mantle coriaceous, oval; covered with short spinous tubercles, of a grey colour; and beautifully spotted with dark grey and purplish brown spots having a blueish shade. Under surface of mantle white, with

purplish spots, a purplish line runs near the edge; border transversely streaked. Dorsal tentacles, greenish, long, white, slightly truncated, laminated clavate tops. Oral tentacles white; long, pointed. Branchial plumes 6; short, broad, bi-pinnate; of a greenish white colour. Foot oblong, entirely covered by the broad oval mantle; white, spotted with smaller purplish spots than those seen on the under surface of mantle.

Found in deep water, near French Battery.

### Doris atrata. *Kel.*

Body ½ inch long, and ⅓ inch broad; ovate, convex; of a smoky-black colour. Mantle broad, when expanded covering the foot; smooth, edge semi-transparent, the rest jet-black. Branchiæ 8; small, of a smoky-black colour, bi-pinnate; two sets of 4 each, all entering the same cavity round anus. Foot long, narrow, rounded in front, slightly projecting behind when in progression; of a pale smoky colour. Mouth indistinctly seen. Oral tentacles linear. Dorsal tentacles pellucid, with clavate apex; black; tips white, looking like eyes set on the tentacles. Ova white, in three or four small narrow tape-like coils.

This species may prove to be either identical with *Doris fumata* of Leuckart, or *D. fumosa* of "Quoy et Gaym," the latter more probably, as the remarkable, white tipped tentacles (always present), could not have passed unobserved by Ruppel. The branchiæ however, of *D. fumata* would appear to correspond with those of the Ceylon species. The next species too, which I regarded at one time as only a variety of *D. fumata*, must, I think, be considered distinct, as it was not found in April with *D. atrata*, but subsequently, when the latter became scarce.

### Doris atroviridis. *Kel.*

Body 10 lines long, of an invisible-green colour. Mantle broad, undulating, of a greenish-black colour; edge streaked with a pale crimson line. Tentacles and branchiæ as in *D. atrata.* Foot of a pale invisible-green. Ova like those of

the preceding species. Some of the specimens had the mantle indistinctly, but regularly, spotted white ; these spots, composed of several smaller spots round a centre, looked, through a magnifier, like little stars.

The young of this species is of a jet-black colour, with a broad brilliant crimson line round edge of mantle and foot. If I had not specimens of different ages to compare with, and observe the gradual diminution of the intensity of the red line, till it became almost obsolete in the larger specimens, I should be inclined to consider the characters of the young to be those of a distinct species ; so very great are the external characters of the young and older animals. The presence of the red line in the young of this species, and its non-existence in the young of *D. atrata*, still more confirms me in the opinion already advanced, that they are not identical species. Both are very sluggish in their habits ; generally, two or more lie locked in each other's embraces, under a stone or a coral branch. In confinement they live longer than any species I have had under observation.

### Doris variabilis. *Kel.*

Body 6 lines long, pellucid green ; the red viscera seen through it. Mantle greenish-brown, and marked with longitudinal rows of reticulated whitish spots. Dorsal tentacles clavate, laminated ; greenish-brown, speckled ; tip white. Branchial plumes 8, small, round a central cavity, tri-pinnate ; brown, speckled white. Foot pellucid-green ; shorter than mantle.

This species is found in great abundance on rocks in Dutch Bay at low-water mark. They vary much in depth of colour ; green, however, always prevailing. In habits, like *D. atrata.*

### Doris exanthemata. *Kel.*

Body 5 inches long ; pinkish or light purple colour. Mantle long, broad ; covered with large and small, smooth conical and rounded nodules, rising from smooth elevated bases. The upper surface is of a deep olive-brown colour, having several white splashes ; edge of a lemon colour. Under surface of mantle

pinkish, and near the body there is a broad undulating reddish band, terminating abruptly on each side below the foot, not unlike in appearance to some cutaneous disease. Dorsal tentacles long ; pinkish and smooth for two-thirds of its length, apex clavate, laminated, truncated ; of a pale brown colour. Oral tentacles long, conical ; pinkish. Branchial plumes 6 ; large, pendant tri-pinnated ; plumes pinkish-red and speckled-white ; midribs greenish. Foot much shorter than mantle, deeply grooved and notched in front, obtusely pointed posteriorly ; of a light pink colour, except the edge which is of a lemon colour with transverse striæ.

The whole animal gives one more the idea of a horrid disease than the charms of a sea nymph. This species is semi-gelatinous and very glutinous on the surface, particularly the mantle. When dead it rapidly dissolves, and cannot be preserved in spirits. The largest specimen I have seen measured 8 inches long and 5 inches broad. It will not live more than a few days in the aquarium. Ova of a beautiful red colour ; coil $\frac{3}{4}$ inch broad, and 18 inches in length. This species resembles *Doris carbunculosa*, but the smooth nodules, and the red ova, of the former will always be sufficient marks of distinction.

### Doris carbunculosa. *Kel.*

Body nearly $4\frac{1}{2}$ inches long ; oblong, oval ; of a pinkish-purple colour. Mantle semi-gelatinous, broad and long, and of an oval form ; purplish-brown colour, studded with numerous large warty nodules, and larger ones rising from a raised tubercular ringed base. Nodules of a deeper brown colour ; some have also a greenish tinge and others are variegated with white. Dorsal tentacles long, produced, clavated, truncated superiorly, laminated ; of a pale purplish colour. Mouth with a small triangular-shaped veil. Branchial plumes 5 ; large, broad and long ; closely tri-pinnated ; of a rusty-red colour, grizzled with white. Foot short, oblong, oval ; of a purplish-pink colour ; sides of under surface veined and of a pink colour.

The mantle of this inelegant *Doris,* is not unlike some carbuncular formation. The under surface is pinkish and shaded with purple. It is a very unsightly object. The edge of the mantle of the young is mottled-yellow. The whole animal is nearly 5 inches long, and 3½ broad in the centre. Ova white, deposited in narrow tape-like form in four or five broad coils. The white ova alone sufficiently distinguish this ugly sea-nymph from her rival *D. exanthemata.*

### Doris intecta. *Kel.*

Body 1¼ inch long. Mantle warty; of a dark-brown colour, nearly black; on the medial line is a thick white pasty line. Dorsal tentacles brown; clavate, laminated. Oral tentacles long, linear, pointed; of a bright-brown colour. Branchial plumes 6, tri-pinnated; of a golden-brown colour. Foot golden-brown; narrow, longer than mantle.

This warty *Doris* is easily distinguished from others of a brown colour by its rufous warty mantle, and the dirty-white line on back. Even the young have the white dorsal streak. Very common in low water in the months of September and October.

### Doris lanuginosa. *Kel.*

Body ⅓ inch long; of a pale-green colour. Mantle green, covered with short downy hair. Dorsal tentacles green, lamellated, pubescent. Oral tentacles not observed. Branchiæ 10 or 12; small, of a sap-green colour, bi-pinnated. Foot shorter than mantle; of a pale-green colour, transparent.

Of this downy species I have only seen one specimen. It lived only a few days. Found near Nicholson's Cove.

### Doris spongiosa. *Kel.*

Semi-gelatinous. Body nearly 3½ inches long. Mantle broad, oval, covering the foot in all parts; of a dull yellow-brown colour, deeply pitted; margin of pits granular; cavities spongious. The whole upper surface of mantle looks like the

surface of some species of sponge. Beneath of a darker yellow-brown colour. Dorsal tentacles large, with slightly truncated, laminated apex, sheaths large, funnel-shaped ; granular. Oral tentacles (?). Branchial plumes 5, grey, drooping much ; bi-pinnated. Foot broad, long.

This very curiously formed *Doris* is found in deep water in the Inner Harbour. The young may be mistaken for a distinct species, from the lateral cavities or pits being deeper. The whole animal is nearly the size of *D. exanthemata*.

### DORIS STRIATA. *Kel.*

Coriaceous. Body 1½ inch long. Mantle nearly smooth ; white, with light-brown wavy streaks. Under surface white, with linear wavy streaks near the body. Dorsal tentacles with short conical, laminated apex. Oral tentacles white, linear, pointed. Branchial plumes 5 or 6, small, bi-pinnated ; white, streaked with brown. Foot pure white, narrow, oblong. Found in Dutch Bay.

### DORIS CORRUGATA. *Kel.*

Body nearly 1 inch long, oval, whitish. Mantle coriaceous, corrugated, and studded with small tubercles ; those on the sides larger, and each has a spine ; of a pale watery-green colour ; black spotted under surface, also greenish and spotted with small dots. Dorsal tentacles short, open, greenish, lamellated. Branchial plumes grey ; 7 or 8, short, pinnated. Foot pale-green ; narrow ; shorter than mantle. Oral tentacles short, triangular, pointed.

I have seen only one live specimen of this curious *Doris*.

### DORIS PICTA. *Kel.*

Coriaceous. Body 2½ inches long. Mantle large, oval, covering entirely the foot ; upper surface granular, of a yellowish-brown colour, splashed with large and small irregular brick-red spots ; under surface white, and near the body painted with small and large bright red spots. Dorsal tentacles clavate,

laminated, slightly truncated ; sheaths large, granular. Oral tentacles long, pointed ; white, spotted red. Foot broad, shorter than mantle ; white.

This remarkably painted *Doris* is found in deep water. Occasionally it burrows in the sand, where it lies for hours,—plumes and dorsal tentacles alone being uncovered.

### Doris bellicosa. *Kel.*

Coriaceous. Body 2¼ inches long. Mantle large, oval, upper surface granular, and covered with small spines ; of a dull brick-red, or chocolate colour, and irregularly streaked with pale-yellow. Under surface of mantle white, splashed and spotted with chocolate. Branchial plumes 6, large, bi-pinnated ; of a dull-rose colour, and speckled yellow in small specimens. Dorsal tentacles with small clavate, pointed, apex. Oral tentacles white, short, pointed. Foot broad, oval, of a dark-red colour with a pale whitish edge.

Found in deep water in the Inner Harbour of Trincomalie. The mantle of this species resembles much that of *D. picta*, but its spines and chocolate-coloured foot sufficiently distinguish it from that species, which has a white foot and beautifully painted under-side of mantle. They live for many months in a vivarium.

### Doris castanea. *Kel.*

Carneous. Body 1¼ inch long. Mantle thick, granular and tubercular ; of a reddish-chestnut colour. Dorsal tentacles red, short, laminated ; tip produced, whitish. Oral tentacles short, linear, pointed. Branchial plumes 6 (?), short, bi-pinnated ; of a purplish colour. Under parts deep vermillion-red, and speckled with darker red. Foot short, red.

Found near Sober Island, Trincomalie Harbour.

### Sub-genus. Onchidoris.

### Onchidoris Leachii, *Blainv.*

Carneous. Body oval, about $1\frac{1}{4}$ inch long. Mantle granular and studded with filamentous granules. Those on the posterior third of mantle often large, and appearing like small branchial plumes. No dorsal tentacles. Two oral tentacles, which appear to protrude through notches, from under the anterior edge of mantle. The foot is broad and nearly occupies the whole of the under part of mantle. Anus opens on the under surface of the posterior part of mantle. Orifice of the organs of generation on the right side.

Found on rocks in the Inner Harbour. I have scarcely any doubt, that this is the *Onchidore* described by Blainville from a specimen seen in the British Museum, whose *habitat* was not known.

The colour of the animal is of a light-grey, mottled with black spots in some specimens. In spirits the filamentous granules are not seen, but when the animal is alive they are so distinctly, and the contractile character of the filaments are very observable, especially of the larger ones.

### Trevelyana, *n. g.*

Body without a cloak. Two dorsal tentacles without sheaths, non-retractile. Mouth in front of head, without tentacles. Branchiæ in a circular disc on the back; non-retractile.

### Trevelyana Zeylanica. *Kel.*

Body $1\frac{3}{4}$ inch long, narrow, elevated and inflated near the branchial plumes; semi-gelatinous, white and spotted with small dark orange-red spots, set wide apart from each other. Head rather produced and rounded; also spotted red. Mouth circular, small; situated in front, without veil or tentacles. Branchial plumes 15 or 16, situated on posterior third of body, round a large disc, in the centre of which is the vent. Plumes long, downy, closely set; pure white, with a longitudinal

bright red streak on the back of each ; slightly contractile, but they do not retract into a cavity ; when extended, they resemble a small tuft of marabout feathers. Genital orifice in a nipple-like process, situated between the anterior and middle-third of body. Foot long, and broad ; terminating posteriorly in a lancet-shaped point, about $\frac{1}{4}$ inch from body ; white, with a delicate light orange-red line on the edge of the foot ; this line is carried partially on each side of head. Tentacles 2, dorsal ; short, conical, pointed ; upper half indistinctly laminated ; of a light orange-red colour at tip ; base colourless, transparent. Ova yellow, deposited in bead-like coils. They generally deposit the coils on branches of sea-weed. Sometimes this *Doris* resembles a miniature fan-tail pigeon ; particularly when perched on sea-weed, and the small marabout plumes are elongated.

Found on rocks and sea-weed near Sober Island.

This elegant creature does not resemble any of the described species. The form of the body is not unlike that of the genus *Ancula*. Its nearest approach, in other particulars, is to *Polycera*.

I venture to make a distinct genus of this *Doris*, and dedicate it to Sir Walter Trevelyan, to whom I am indebted so much for the liberal aid he has afforded me in my researches into the Natural History of Ceylon.

## Fam. TRITONIADÆ.

### MELIBŒA. *Rang.*

Animal elongated, with a narrow, channelled foot, and long slender tail ; sides of the back with pairs of tuberculated lobes, easily deciduous ; tentacles cylindrical, retractile into long trumpet-shaped sheaths ; head covered by a lobe-like veil ; sexual orifices behind right tentacle ; excretory behind first gill on the right side.—(*Woodward.*)

### Melibœa viridis. *Kel.*

Animal gelatinous, transparent, of a greenish vitreous colour. Body covered with hairy filaments. Head small, nearly circular, covered with filaments. Veil large, and very expansive ; circular opening lined with cilia. Tentacles 2, about $\frac{3}{8}$ inch long ; capsule small, covered with filaments. Branchiæ 6 or 7 on each side, unequal, wedge-shaped; placed alternately ; base broad ; slightly pedunculated, covered with cilia and filaments, giving a very hairy appearance ; base brown ; the other parts greenish and speckled with dirty white. Foot narrow, of pinkish colour on edge, and upper surface covered with short filaments.

Nearly 3 inches long.

Found on weeds near Inner Harbour ; not common ; can swim very actively. The veil over the head is used as a net doubtless to entangle its prey. The opening is very dilatable. Deposits its ova in a flat mass ; ova white.

### Scyllæa (?) Dracæna. *Kel.*

Animal green ; elongated, narrow. No mantle. Two tentacles placed anteriorly on side of head ; non retractile ; tentacles folded or cylindrical, slightly granular. On the centre of the back there are three unequal wing-like denticulated lobes, of a green colour, with a tooth-like processes, tipped red ; sides of the posterior half of body also toothed with two lines of small, pointed, red-tipped tubercles. Foot narrow, channelled. Mouth protected by two small semi-orbicular flaps or veils. Orifice on right side. Length nearly 1 inch.

I have some doubts as to the propriety of placing this species under the genus *Syclløa.* I could not discover any tufted branchiæ on the surface of the dorsal lobes. I propose naming this genus, closely allied to *Glaucus,* if new, in honor of Dr. Templeton, late of the Royal Artillery (brother of the Belfast Naturalist) who has contributed considerably to the Fauna of Ceylon.

I have found only one specimen on a branch of sea-weed. It looked at first like a piece of green weed, but on placing it in fresh sea water, the lobes expanded and waved about very briskly. The red tips of the lobes contrasted beautifully with the bright green of the animal. It lived only a few hours.

### POLYCERA (?) ZEYLANICA. *Kel.*

Body $\frac{1}{2}$ inch long. No distinct mantle. Head covered by a membranous fimbriated veil; the long filaments slightly toothed. Veil continuous with a narrow membranous expansion on side of body, which are united at the tail. Large fimbriated filaments also on sides of body. A membranous crest runs on the medial line of back. Dorsal tentacles retractile in a sheath; clavate, laminated, incurved at the tip; brown, white tipped. Oral tentacles white; broad and short. Branchial plumes 5, short, bi-pinnated, retractile, placed in a circle, in the centre of the back, near the third pair of dorsal filaments. Colour above, bright orange-red; beneath whitish, with red specks seen through the transparent foot. Ova, bright red; in narrow coils. The whole animal is scarcely 1 inch long; and its broadest part not more than $\frac{3}{8}$ of an inch.

I have placed this species, very doubtfully, under the head of *Polycera*. I believe there is sufficient reason to make a new genus of the leading characters of this pretty little creature. The transparent membranous expansion is fully extended when the animal swims, which it does, more freely than any known species. For 10 or 15 minutes it will keep floating and moving its body like an eel in the water. Very rare; a few specimens lived for many months in my vivarium.

### Fam. ÆOLIDÆ.

Animal with papillose gills, arranged along the sides of the back; tentacles sheathless, non-retractile; lingual teeth 0. 1.0; ramifications of the stomach and liver extending into the dorsal papillæ; excretory orifices on the right side; skin smooth, without spicula; no distinct mantle.

### Æolis* Husseyi. *Kel.*

Tentacles 4. Both pairs of the same shape and form ; but the anterior ones longer, of a limped-orange hue, tipped with white. Back of a dull orange-brown colour ; a triangular white space behind dorsal tentacle. Branchiæ numerous, in 3 rows on each side of body, white and ringed with light purple, tip white. Foot dilated anteriorily ; no lateral processes.

Rare; named in memory of a departed and beloved companion of my earliest scientific labours.

### Æolis bicolor. *Kel.*

Body $\frac{3}{8}$ inch long, slender ; waxy-white ; a dusky spot on neck anterior to dorsal tentacles. Dorsal tentacles short, smooth, transparent white at base ; corrugated or laminated at apex, of a deep orange-red colour, becoming darker at tip. Oral tentacles twice as long ; pellucid-white throughout ; tapering, curved. Head small, rounded. Branchiæ medium sized ; narrow, acutely pointed ; white with a subterminal orange-red ring ; apex waxy-white. They are set in 6 or 7 small clusters, the anterior ones composed of 34 or more branchiæ ; the others of two, rarely of three ; becoming smaller as they approach the tail. Foot linear ; white, transparent ; slightly expanded in front.

Found among sea weed in Back Bay, Trincomalie.

### Æolis effulgens. *Kel.*

Tentacles 4 ; 2 dorsal moderately long, laminated obliquely ; dark-orange, tipped white. The two anterior ones orange, with a whitish spot in centre and tipped white, a dark shade behind dorsal tentacle. Branchiæ in 5 or 6 clusters on each side of back. The anterior clusters consisting of 12 or 15 narrow

---

* *Etym*, *Æolis*, daughter of Æolus.

obtusely pointed branchiæ ; orange-red at base, ringed with white and orange, tip white ; a bluish line running longitudinally for nearly two-thirds of its length.

Found in great number in Dutch Bay, and other parts of the sea near Fort Frederick. Spawns in June and July. Ova white, in narrow thready coils.

ÆOLIS PAULINÆ. *Kel.*

Tentacles 4 ; two dorsal, red, wrinkled. The two terminal tentacles pinkish, tip red, base white. Branchiæ reddish, numerous, short ; anterior ones have a whitish central ring, tipped red ; posterior ones of a redder colour, tips more broadly tipped with red ; the central white ring less distinct. Foot expanded, with a short, triangular-pointed process. Dength 3½ lines.

ÆOLIS TRISTIS. *Kel*

Tentacles 4 ; two dorsal, about half the size of the two anterior ones ; white with blackish rings. Body white, an interrupted blackish line on each side of back. Branchiæ in clusters of 3 or 4 ; short, pointed, white, and ringed with black. Foot slightly expanded, and notched anteriorly. Length about 3 lines.

Found on sea-weed in one of my Aquaria. Ova white.

ÆOLIS NODULOSA. *Kel.*

Tentacles 4 ; opaque-white. Dorsal long, pyramidal, pointed, with three nodular rings ; oral tentacles short, narrow, pointed, white with a yellowish shade. Head and back white. Branchiæ in five small clusters on each side ; long, nodular, obtusely pointed ; opaque-white and spotted indistinctly with slight orange-brown ; base darker. Foot slightly contracted anteriorly.

Length about ½ inch.

### Æolis Smedleyi: *Kel.*

Dorsal tentacles pyramidal, ringed ; of a dusky grey colour. Oral tentacles long, pointed, white, with a central red ring. Branchiæ in five small clusters on each side ; the anterior pair largest. Papillæ short, conical ; white, and ringed with grey. Foot long, with anterior tentacular processes Length 4 or 5 lines.

I have named this species in remembrance of one who was a frequent visitor of my "Aquarian establishment," and who took a warm and friendly interest in all my scientific pursuits. This small *Æolis* was discovered on some sea-weed growing in a Vivarium.

### Genus. Proctonotus. *A. and H.*

Animal oblong, depressed, pointed behind ; dorsal tentacles 2, linear, simple, with eyes at base, behind ; oral tentacles short ; head covered by a small semi-lunar veil ; mouth with horny jaws ; gills papillose, on ridges down the sides of the back and round the head in front ; vent dorsal.—*Woodward.*

### Proctonotus Orientalis. *Kel.*

Animal semi-gelatinous, greenish. Dorsal tentacles 2, bifurcated and retractile. Oral tentacles short, pointed. Branchiæ, four or five rows on each side of body, those nearest the body smaller ; wedge-shaped, rounded superiorly, flattened ; green, spotted grey and green. Branchiæ carried round the head in two or three rows ; middle ones longer, all of the same shape. Foot broad, long, grooved in foot. Length 2½ inches. Ova white, in waved thread-like coils.

This exceedingly interesting animal may perhaps occupy a new generic place, as I do not observe the *bifurcated dorsal branchiæ* noticed in the other species of the genus *Proctonotus*. When coiled up it looks like a flower, with green petals.

Found in Trincomalie, in May and July.

### Pterochilus viridis. *Kel.*

Animal light-green. Length ½ inch. Tentacles 2, simple, long, pointed. Head with small lateral lobes. Branchiæ very numerous, closely set ; long, linear, acutely pointed. Branchiæ green, and spotted with darker green and grey. Foot linear. Found on sea-weeds, and, owing to its colour, not easily recognised. Lives for a long time in confinement. Ova green.

## Fam. Elysiadæ.

### Genus. Elysia. *Risso.*

Animal elliptical, depressed, with wing-like lateral expansions ; tentacles simple, with sessile eyes behind them ; foot narrow.

### Elysia grandifolia. *Kel.*

Head and body light-green, white, and occasionally black spotted. Head and neck naked. Tentacles 2, folded longitudinally, on side of head ; bronzed-green, tip brown. Buccal tentacles 2, small. Membranous wing-like expansion on each side of body ; broad anteriorly ; acutely pointed posteriorly, and united at the tail. Membrane green, edged with a black and a golden yellow line. No distinct foot. Orifice on the back (?). Mouth beneath.

The whole animal gives one the idea of a large leaf ; and, when moving, that of a butterfly. Found on sea-weed. Some are more than 3 inches long ; greatest transverse diameter, with wings expanded, 2½ inches. Distinct veins, filled with fluid seen on the wings ; the heart pulsating on the centre of the back. I have some doubts as to the propriety of placing this interesting creature under the head of *Elysia*. If on further investigation, it is found that it does not belong to any known genera, I propose naming it Hydropsyche.

### Elysia punctata. *Kel.*

Smaller than the last species ; largest specimen seen measuring 1½ inch.

Animal of a lighter green colour. Tentacles dark-brown, spotted white. Back whitish-green, dotted with black and green, and spotted like the back. Edge of mantle black, and shaded with golden ; under surface of wings tubercular and dotted black.

Found on sea-weed. Not easily distinguished from the young of *E. grandifolia.*

### Elysia cœrulea. *Kel.*

This is a very small, beautiful species, about $\frac{3}{4}$ inch long ; when the wings are folded, it is not thicker than a crow's quill. Tentacles 2 ; blue, with a central red ring, tip blackish. Body and wings blue ; under part of head, and fore part of foot, red ; edge of wing lined with black and red lines, the latter outermost.

Found on sea-weed, in the Inner Harbour. All three species have the same generic characters, and doubtless belong to the same genus.

## Order. Infero-branchiata.

### Genus. Phyllidia. *Cuv.*

Animal oblong, covered with a coriaceous tuberculated mantle ; dorsal tentacles clavate, retractile into cavities near the front of the mantle ; mouth with two tentacles ; foot broadly oval. Gills forming a series of lamina extending the entire length of both sides ; excretory orifice in the middle line, near the posterior end of the back, or between the mantle and foot ; reproductive organs on the right side ; stomach simple, membranous.

### Phyllidia Zeylanicus. *Kel.*

Mantle tubercular ; salmon coloured ; three continuous black lines run round the whole length. The internal one broader,

taking within its circuit the dorsal tentacles and anal orifice; two other lines run parallel to this all round the mantle; the outer one narrowest. Dorsal tentacles large, conical, pointed; circularly laminated at the upper half, which is of a black colour. The two oral tentacles small, black. Foot whitish, notched in front; the blackish viscera seen through. Branchiæ whitish on sides of the body except in front. Anal opening on a black coloured tube, behind which there are four or five large tubercles of the same form as those on the other parts of mantle. Length 1 inch; $\frac{1}{8}$ inch broad.

Very rare.

### Genus. Diphyllidia. *Cuv.*

### Syn. Linguella. *Blain.*

Animal oblong; mantle ample; gills limited to the hinder two-thirds of the body; head with minute tentacles and a lobe-like veil; vent at the right side, behind the reproductive orifices? lingual teeth 30. 1. 30.

### Diphyllidia formosa. *Kel.*

Body pink. Mantle leaf-like; dark-purple, with purplish black shades; edge yellow, streaked longitudinally with golden yellow, broad lines alternated with very delicate narrow ones. Veil purple-black, except the anterior edge; beneath, of a lively pink colour. Foot pink, grooved in the median line of posterior half. Branchiæ buff; a whitish spot on anterior third of plumes. Dorsal tentacles emerging through notches on anterior edge of mantle; tentacles red with blackish tips and sides. No oral tentacle. Length $2\frac{1}{2}$ inches, $1\frac{1}{4}$ inch broad.

This very beautiful species is found in deep water. It occasionally buries itself in sand, with only the head and tentacles exposed, and lies for hours in this position.

## Order. Tecti-branchiata.

Animal usually provided with a shell both in the larva and adult state ; branchiæ covered by the shell or mantle ; sexes united.

### Fam. Pleuro-branchidæ.

### Genus. Pleurobranchus. *Cuv.*

Animal oblong, fleshy, convex above with a very large and overspreading mantle. Foot large, equally outspreading, and thus leaving a wide canal all round the body. Head distinct, furnished with a veil, uniting on each side with the borders of the foot, and with two tubular tentacles, which are split anteriorly ; mouth at the extremity of a proboscis ; branchiæ composed of a double row of lamella, forming a plume on the posterior right side, between the mantle and the foot. Anus carried by a small tube behind the branchiæ. Organs of generation in front. Shell sometimes rudimentary, membranous, with a tolerably distinct apex hidden in the thickness of the mantle.—*Woodward.*

#### Pleurobranchus citrinus ? *Ruppel.*

Orange-red ; mantle darker than the other parts of the animal, and speckled with whitish spots. About 1 inch in length. Ova reddish, in circular broad coils.

Very common in Trincomalie. Found in low-water, on coral stones and sea-weed, nearly throughout the year. Spawns in May, June and July.

#### Pleurobranchus reticulatus ? *Gmel.*

Pale orange-red, reticulated mantle, and spotted purple.

About 2 inches long. Found near Fort Frederick, Trincomalie, in shallow water among rocks.

### Pleurobranchus Zeylanicus. *Kel.*

Pale yellow, splashed with darker yellow and brown, and minutely spotted with rusty-brown.

About 2 inches long.

Rare ; found in Rock bay.

### Pleurobranchus purpureus. *Kel.*

Deep reddish-purple Mantle very dark-purple, and spotted with still darker purple. There is a bright white zig-zag line on each side of the back of some large specimens. Length nearly 6 inches ; 4 inches broad. The young is of a lighter purple, and may be mistaken for another species.

Found in deep water, Trincomalie.

# CEYLON ZOOPHYTES.

## Radiata.

### Order. Polypi.

### Fam. Actiniadæ.

Animal single, fleshy, elongate or conical, capable of extending or contracting itself, fixed by its base, but with power of locomotion, mouth in the middle of the upper disc, very dilatable, surrounded by one or more rows of tentacula ; oviparous and viviparous ; marine.

### Genus. Actinia. *Linnæus.*

Body conoid or cylindrical, adhering by a broad base ; the space between the mouth and the rim of the upper disc occupied by one or more uninterrupted series of conical, undivided tubular tentacula, which are entirely retractile.

### Actinia Wardii. *Kel.*

Body large, greenish-yellow, except the upper half, which is of purplish colour and tuberculated ; the other parts nearly smooth, indistinctly streaked. Disc buff, with darker radiating lines. Tentacles in two or three rows, about 1 inch in length, narrow, pointed obtusely ; whitish ; base purplish, tip bright crimson, transversely striped with grey or dark buff.

Height 2½ inches. Breadth nearly 2 inches, when expanded.

Found in deep water on the oyster banks at Cottear, opposite Fort Frederick.

This handsome species I have dedicated to Sir Henry Ward, Governor of Ceylon, under whose auspices I have been enabled

to prosecute my researches among marine animals, with more than ordinary success.

### Actinia Tranchelli. *Kel.*

Body short, longitudinally striated with pale-green, alternately with lines covered with yellow and white tubercules, small ovular granules round edge of disc. Disc circular, cup-shaped; greenish and rayed with four or five white lines. Tentacles about an inch long, set in two rows, narrow, finely pointed, pellucid, and spotted with opaque, oblong, white and purplish spots; 1½ inch high and ¾ inch broad. The inner row of tentacles generally erect, and the outer curving over side of body.

Found in Dutch Bay. Named in compliment to Miss Tranchell, of Trincomalie.

### Actinia pudica. *Kel.*

Body opaque-white; irregularly striated and spotted with light-crimson. Tentacles few, pellucid-white; short, conical; set in two or three rows. Disc pellucid, and streaked with milky-white.

This elegant anemone, when detached, floats on water like a globe, and may be taken for a species of the genus *Mayas*.

Found on small stones in Back Bay, Trincomalie.

### Actinia passiflora.

Body semi-carneous, brown. Tentacles few; short, stout, truncated, or capped (?); purplish-white, the longer five or six have dark-purple base and rings.

This may be a species connecting *Capnia* with *Actinia*. Height 1 to 1½ inch; ⅔ inch broad.

Found near Sámi Rock.

### Actinia refulgens. *Kel.*

Small, the largest seen scarcely one inch long; body white, translucent; tentacles short, in two rows; brown with golden spots.

Found on stones in Back Bay, Trincomalie.

Resembling a *Zoanthura,* but the clear diaphanous body and the disunited tentacles, at once show this creature to be an *Actinia.*

### Actinia vermicosa. *Kel.*

Very small. Body 3 lines in diameter and 4 lines in height ; whitish-pellucid. Tentacles from twelve to eighteen, small, worm-like ; golden-yellow or dark yellow-brown. Very viscid. When the tentacles are withdrawn this little creature looks like the larva of an insect ; oblong globuse, with a golden coloured head.

### Actinia fluctuosa. *Kel.*

Body pale, flesh-coloured ; indistinctly longitudinally striated, with white spotted lines ; several rows of pale-blue granules near edge of disc.

Disc waved, tubercular, forming sometimes in triangular or quadrangular masses, at other times circular ; centre of disc pale, the rest white with radiating lines.

Tentacles numerous, in three rows, pale-brown, occasionally greenish-pellucid. The number on inner row fewer ; extreme point white.

Height 1 inch. Breadth $1\frac{1}{4}$ inch.

Found in Back Bay, Trincomalie.

### Actinia samaragdana. *Kel.*

Small, disc of a beautiful bright emerald-green, with white lines or radiating rays. Tentacles numerous, set in three rows ; short, oblong, semi-conical, obtusely pointed ; white at the base; beyond this, purplish-brown, the rest very pellucid, dashed with purplish and white spots.

Body flesh-coloured, longitudinally striated. Two or more rows of pale-green rounded tubercules, on discal margin, inferior to outer rows of tubercules ; at times these granules are of a white colour.

About 1 inch in diameter, and $\frac{3}{4}$ inch high. Found in deep water, Inner Harbour.

### Actinia Austinii. *Kel.*

Body rounded, thick, reddish ; covered with brick-red tubercules. Disc pellucid-white, or reddish. Oral opening $1\frac{3}{4}$ inch in diameter, margin surrounded with tentacular-like bodies in two or three rows. Tentacles numerous, in four rows ; nearly $2\frac{1}{2}$ inches long, narrow, acutely pointed ; pellucid-white, spotted on the inner side. Stands $2\frac{1}{2}$ inches high.

This large anemone is found in great abundance on the rocks near Fort Frederick in the months of May and June. Some, entirely free of the brick-red colour, are of a pale greenish-white ; others, have the disc one half purple and the other half grey. It adheres to the finger.

I have named this species in remembrance of a valued friend, who was one of the founders of the Ceylon Military Medical Officers' Museum,—Dr. Austin, late of the 97th Regiment.

On my recent visit to Colombo, I obtained many specimens of a smaller anemone from Mutwal rocks, closely resembling this species, but with short tentacles, and without the adhering qualities of the foregoing species. I am inclined to believe this to be a distinct species. Colours very changeable.

### Genus. Anthea.

Body cylindraceous, adhering by a broad base ; tentacula disposed in circles round the mouth, elongated, tapered, and incapable of being retracted within the body.

### Anthea Indiana. *Kel.*

Body transparent, almost colourless, globose at base, elongated ; a few white spots near disc. Tentacles long, delicate, finely pointed, set in two rows on the edge of a greenish transparent disc. The inner set of tentacles more than twice as long as the external row. Tentacles pellucid, indistinctly ringed, alternately with grey and white. Oral opening

surrounded with an elevated hexagonal ring, taking the form of a cup, on the centre of which is the transverse slit of the mouth.

This parasitical anemone is found on Pearl Oysters, in the Harbour of Trincomalie. It grows very rapidly in the Vivarium, and is a good guide for ascertaining the quality of the sea water in which it is placed. When the water is impure, or any animal in it dead and decaying, this *Actinia* shrivels up and assumes a dark-brown or blackish colour, and as the water is purified the creature regains its pellucid form.

### Anthea arachnida. *Kel.*

Resembling the *A. Indica*, but much smaller, and the disc is spotted black. The tentacles worm-like ; pellucid-white, and spotted dusky. Found on rocks and shells.

### Anthea aurea. *Kel.*

This is a very minute species ; when elongated, nearly one inch high, and scarcely four lines in breadth. Body pellucid, tentacles few, short ; golden-yellow.

Found on rocks and shells.

### Anthea meleagrina. *Kel.*

Body short, broad, greenish, translucent, slightly tubercular. Tentacles numerous, of moderate length, narrow, pointed ; greenish-brown, with darker brown rings. Mouth slightly elevated. Disc pale-green.

Height $\frac{1}{2}$ inch. Breadth $1\frac{3}{4}$ to 2 inches when expanded.

Found in the Inner Harbour, in deep water, adhering to Pearl Oyster shells.

### Actinodendron argentea. *Kel.*

Body white. Disc granular, frosted white. Tentacles short, acute ; silvery-white, transverse granulated lines on inner surface ; short pinnules on sides.

Height $\frac{1}{2}$ inch, breadth 1 inch. Very rare. Found in deep-water.

ACTINODENDRON ZEYLANICUS. *Kel.*

Body large, semi-gelatinous, yellow or buff, longitudinally streaked, alternately with lines of pearly tubercules. Disc broad, cup-shaped, greenish-brown, or purple, with numerous radiating lines of various colours ; granular. Tentacles purplish-brown ; numerous, in three or four rows ; broad, long, pointed, crossed on superior surface with white lines, which are laterally tubercular, or slightly pinnated. A row of large oval bodies on edge of disc. Height of the largest specimen seen $3\frac{1}{2}$ inches. Breadth 3 inches. Tentacles 1 to $1\frac{3}{4}$ inch long, all of nearly equal length.

This handsome arborescent anemone is found on rocks in the Inner Harbour, in two or three feet of water.

ACTINODENDRON HOROLOGIA. *Kel.*

Body white, with pinkish streaks. Disc depressed, circular, pale-brown, granular ; a broad pale purplish circle, about midway between oral opening and tentacles, and on this ring are twelve broad purplish streaks, placed equidistant. Tentacles in three rows ; short, flattened, pointed ; those nearest the oral opening larger. All have tubercular granules, placed in transverse rows, from six to eight in number. Tentacles yellowish, a few white granules near edge. White tubercular lines placed in longitudinal rows on surface of body. Body when elongated about $2\frac{1}{4}$ inches high.

Found at Trincomalie, on small stones, in low-water.

ACTINODENDRON VIRIDIS. *Kel.*

Body white, with greenish streaks and rows of white granules. Disc depressed, greenish ; $\frac{3}{4}$ inch in diameter. Tentacles short, acutely pointed ; granulated on edge ; set in two rows. Those nearer the disc shorter, a row of larger white-spotted granules on edge of disc.

In height $2\frac{1}{2}$ inches; narrow at middle and base. Trumpet-shaped above.

Distinguished from *Horologia* by the absence of the purple zone on disc, and from its longer tentacles. The tubercules too are less swollen, and there is a more marked space running longitudinally on tentacles.

Found with its body buried in sand in the Harbour of Trincomalie.

DIOSCOSOMA (ACTINODISCUS) ? ZEYLANICA. *Kel.*

Body thick, short; pinkish, minutely punctulated with bright-red; near the disc the body is streaked longitudinally with closely spotted purplish lines. The body is expanded into a cup-like disc, of a bright vermillion-red colour, with radiating white lines. Disc broad, expanded, and covering the whole body, surface covered with small lines (three or four,) short, conical, truncated, tentacles, disposed in rays, running from oral opening to edge of disc, alternated with shorter ones which proceed from middle-third of disc with two other shorter ones, on each side, and the whole terminate at the margin in close compact rays. On each side of oral opening, is a semi-globular body with a central foramen, which communicates with the oviducts.

The colours of this singular form of anemone vary much; at times, it is all of a purplish-brown with greenish reflections, on other occasions the uncovered space of disc is of an earthy-brown colour, or green, and the rays of tentacles either entirely, green, or maculated with purple and white.

Breadth or disc when expanded from 4 to 5 inches.

If this anemone is to be considered of a genus distinct from *Actinia*, I think of reinstating the generic term of *Actinodiscus*, given to a much smaller creature by M. Blainville, for it also, like the species of Leuckart's *Dioscosoma*, has two discs, and the animal, when waiting for its prey, is not unlike a depressed hour glass in shape. It can withdraw the superior disc within, when the red-spotted body is seen to be of a club-shaped form.

### Peacha Gossei. *Kel.*

Body semi-carneous, covered by a brownish skin, corrugated, narrow and long. Tentacles from nineteen to twenty-one, long, narrow, and acutely pointed ; either of a green colour, or purple, marked on superior surface with transverse blue or white lines, some of which are narrow-shaped. Mouth on a conical eminence. Inferior opening giving passage to ova and excrementitious matter. Length 4 or 5 inches, and about $\frac{3}{4}$ inch broad at base, when elongated. Very active in springing ; it can adhere to sand or stones.

This is, I believe, the second species known of Gosse's new genus *Peacha.* I have dedicated it to the original describer of the genus. Mr. Gosse's description led me to observe this species very closely, although I was at first induced to consider it a species of *Edwardsia.* The inferior orifice admits of the passage of a moderate sized probe. The oral orifice has not that foliated appendage described by Gosse. It is for him to determine whether this is a generic character.

### Zoanthura.

Zoanthura, sp.—green disc.

Z. Mammalifera.—brown disc.

Being now on the eve of embarkation for India, I have only time to notice the above two species of Zoanthura, which I trust will be described by other naturalists who may succeed me.

# CEYLON ENTOZOA.

## Order. Parenchymata.

This order includes all those *Entozoa* which have the body filled with a parenchyma, or pulpy matter, either in a cellular tissue, or simply in the cavity, in which there is no alimentary apparatus to be discovered, except a few canals, which carry nourishment to all these parts. The ovaries are also imbedded in the parenchyma ; there is no abdominal cavity, no intestine, and no vent ; and the signs of a nervous system are few and doubtful.—*Cuv.*

### Fam. Tremadotea.

Have the under part furnished with cup-like discs, or suckers, by which they adhere.

### Genus. Planaria.

Body flattened, depressed. Like the *Flukes* (which infest the liver of sheep), they are bi-sexual. Very voracious, and will even feed upon their own species. They multiply rapidly in the ordinary way, and also by division of the body—even spontaneous division as is alleged. Mutilated parts are also very readily reproduced, and a partial division of the body, will even produce an animal with two heads or two tails, according as the anterior or posterior end is cleft. Several species inhabit the fresh waters, but larger ones are met with on sea shores.—*Cuv.*

The species herein described are all marine, found on rocks and sea-weeds in the harbour and bays of Trincomalie. They are exceedingly interesting creatures, some rivalling the tribe of *Doridideæ* in colours. They live for a long time in the Vivarium. The mouth, situated in most of the species near the anterior third of under part of medial line, opens and dilates like that of a sea-anemone. Ova of most species white, deposited in thin flakes on rocks and sea-weed.

Further investigation will, I believe, lead me to separate the species into more than two genera ; the majority of species correspond with M. Dugé's *Derastoma* in which there is one opening, nearer the anterior edge than in *Planaria* The presence of tentacles, or rudimentary ones, on the anterior edge, or on the back, will also perhaps form a generic distinction. I have attached the species without any appearance of tentacular appendages to a new genus (*mihi*), *Penula*. The mouth too in this genus is placed nearer the centre of under part.

### Planaria cerebralis. *Kel.*

Rudimentary tentacles anterior, formed by two folds of the margin. Upper surface of a yellowish-brown colour and minutely streaked with fine wavy brown lines ; border lined with a black line, streaked with white. Beneath, of a beautiful salmon colour. Mouth large, placed on the anterior third of lower part of body ; lips white.

This is the largest species observed, nearly 3½ inches long, and 3 inches broad. Ova greenish-white.

### Planaria violacæa. *Kel.*

Tentacles, as in last species. Upper surface violet-purple colour, edged with bright-yellow. Median line yellowish ; under parts rose coloured.

About 1¼ inch long, and ¾ inch broad. This beautiful species, in a quiescent state, resembles some variety of pansy. Ova yellow.

### Planaria viridis. *Kel.*

Tentacles folded ; green, spotted brown ; edge dark grizzly brown. Under parts paler.

About 1¼ inch long.

### Planaria armata. *Kel.*

Tentacles folded, but more distinctly formed. Upper surface of a dark-purple colour, covered with short, black spines. Beneath pale-purple, smooth. About $1\frac{1}{2}$ inch long, and nearly $1\frac{1}{4}$ inch broad.

### Planaria papilionis. *Kel.*

Tentacles as in last species, black, white tipped. Upper surface yellow, covered with small black spines. Beneath pale-yellow. Margin whitish.

Length about 1 inch.

Very like a butterfly moving in the water.

### Planaria purpurea. *Kel.*

Tentacles rudimentary. Upper surface of a beautiful purple-colour ; beneath paler purple.

About $1\frac{1}{2}$ inch long.

### Planaria fusca. *Kel.*

Upper surface dusky-brown. Beneath paler brown.

About $1\frac{1}{2}$ inch long.

### Planaria elegans. *Kel.*

Tentacles red, situated on the anterior third of mantle, Upper surface pale-yellow, shaded with greenish brown, black dots ; margin black, lined with orange. Beneath whitish.

Length $1\frac{1}{4}$ inch.

### Planaria thesea. *Kel.*

Tentacles white, with red tips, rising from depressions, or cups, placed near the middle third of body. Upper surface of a chocolate-brown colour, edge yellow. Mouth in the middle, below genital organs. Beneath pale-purple.

Length $1\frac{1}{2}$ inch.

### Planaria striata. *Kel.*

Tentacles rudimentary. Upper surface brownish-purple, streaked with brown. Beneath pale orange-brown.

Length 2½ inches.

### Planaria meleagrina. *Kel.*

Tentacles of an oval form. Medial line reddish, edged with a black line, the rest striped with broad white and light purplish streaks ; margin waved and edged with black. Length 1¾ inch. There are two linear appendages on neck, above eye spots.

### Planaria undulata. *Kel.*

Tentacles rudimentary. In medial line purplish, the rest pale-yellow, with undulating lines and spots of purplish-brown ; margin purplish. Length 2 inches.

### Planaria aurea. *Kel.*

Tentacles two, simple ; pointed, rising from the anterior third of body. Upper surface golden and speckled with white and brown.

Nearly 2½ inches long.

No drawing made of this species.

### Planaria dulcis. *Kel.*

Tentacles rudimentary. Body brown in the medial line, the rest light-green, minutely spotted with reddish brown. Margin white.

Length 1 inch.

### Planaria Zeylanica. *Kel.*

Tentacles rudimentary. Upper surface of a dark purplish chocolate colour ; margin white, with an internal adjoining orange and black line. Beneath paler.

Length 2½ inches, and 1½ inch broad.

Very abundant in months of May and June. Ova white.

### Genus. PENULA, *n. g.* *Kel.*

Animal gelatinous, flattened like *Planaria*, but without any appearance of tentacular appendages. Mouth placed beneath, near the central third of body. Eye spots on anterior third of back.

Ruppel figures one species of this form in his work on Abyssinia.

### PENULA OCELLATA. *Kel.*

Upper surface pale yellowish-brown, with dark-brown ocellated spots. Beneath, pale-buff. Length 2 inches.

### PENULA PUNCTATA. *Kel.*

White. Above minutely punctulated with reddish-brown. About $1\frac{3}{4}$ inch long.

### PENULA FULVA. *Kel.*

Yellowish, striated transversely.

Length $2\frac{1}{2}$ inches.

### PENULA ALBA. *Kel.*

White throughout.

Length $1\frac{1}{2}$ inch. Narrow. Ova of all the species whitish.

Several other species, I have no doubt, will be yet obtained from Ceylon.

---

As these pages are going through the press, I have returned from Calcutta, and I am now preparing for the Pearl Fishery at Aripo, where I hope to obtain many curious forms of *Zoophytes*.

# ACCOUNT OF THE WORKS OF IRRIGATION CONSTRUCTED BY KING PARÁKRAMA BÁHU, CONTAINED IN THE SIXTY-EIGHTH AND SEVENTY-NINTH CHAPTERS OF THE MAHÁWAṈSO, WITH INTRODUCTORY REMARKS.

By Louis De Zoysa, Mudaliyár.

The following extracts from the Maháwaṉso, having reference to works of Irrigation executed in the reign of Parákrama Báhu I., (A. D. 1153—1186), may not prove altogether devoid of interest, in connection with the very able and interesting Papers on the subject of ancient irrigation in Ceylon, recently published by order of Government. The Sovereign alluded to is the celebrated Parákrama Báhu the Great, the constructor of the "Sea of Parákrama," the invader of India and Burma; and whose reign Mr. Turnour characterizes as "the most martial, enterprizing, and glorious in Siṉhalese History."

The first extract is the 68th Chapter of the Maháwaṉso, and contains an account of the efforts made by Parákrama Báhu to promote the cultivation of rice, on his assuming the government of the *Pihiṭi-raṭa** under the title of *Mahádi*

* The ancient divisions of Ceylon were :—*Pihiṭi-raṭa*, bounded on the west, north, and east, by the sea; on the south by the Maháwẹli-gaṉga, and Dẹduru-oya rivers; it was also sometimes called *Rája-raṭa* as the ancient capitals were situated in it: *Ruhuṇu-raṭa*, bounded on the west and north by the Máhawẹli-gaṉga, and Kaḷu-gaṉga (or Kaḷutara) rivers, and on the east and south by the sea. The mountainous portion of it was called *Malaya-raṭa*: *Máyá-raṭa*, bounded on the north by the Dẹduru-oya, on the east by the Maháwẹli-gaṉga and the mountains, on the south by the Kaḷu-gaṉga, and on the west by the sea."—Turnour's Ceylon Almanac, 1834, p. 57.

*pádo* or sub-king. The second extract is a part of the concluding Chapter of the reign of the same monarch, and gives a summary account of the principal public works executed during his government. It consists of 87 verses, of which the first 24 relate to the formation of extensive gardens and plantations ; the next 26 to the construction of tanks and canals ; and the last 27 to the erection of various public buildings, such as dágabas, image houses, preaching halls, inns or houses for strangers, libraries, theatres, &c. I have only translated the verses relating to tanks ; those which have reference to canals and water-courses having already been translated and published by Mr. Turnour in the Ceylon Almanac for 1834.

I have not thought it necessary to add any comments of my own, by way of illustrating the translation ; but I may perhaps be permitted to say a word in reference to the information which a passage in the first extract gives respecting the "Sea of Parákrama," to which so much attention has lately been drawn by the publication of that valuable contribution to the ancient history of Ceylon,—the "Report on the Ellahara Canal, by Messrs. Adams, Churchill and Bailey."

As stated by these gentlemen, "the situation of the 'Sea of Parákrama' has never hitherto been satisfactorily ascertained."

Turnour states (*vide* Ceylon Almanac of 1834, p. 68) that "the 'Sea of Parákrama' with its embankments of many outlets is yet unknown, or at least unnoticed."

Major Forbes indeed surmised that the series of lakes connected by the Ellahara Canal, might be the waters to which the vanity of a King gave his own name, but he adds, that "until this canal shall have been traced through the Konduruwawe hills, the extent and difficulty of such an undertaking must excite doubts whether it were successfully accomplished."

The explorers of the Ellahara Canal were, however, the first who declared their belief, that the series of tanks connected by this canal were the waters which bore the name of the "Sea of Parákrama."

It does not, however, appear that this opinion is corroborated by the Mahάwanso, since in a passage in the 68th chapter, mention is made of a particular tank, which was afterwards called the "Sea of Parákrama."

The passage alluded to is the following :—

> අතීව ඛුද්දකං පුබ්බෙ පණ්ඩවාපිඤ්ච කාරිය,
> සංවඩ්ඪිතුච්චතායාම විත්ථාරත්ථිරපාලිකං
> අබ්භුන්නත මහාවාරි පාතං සජලනිග්ගමං
> පරක්කම සමුද්දොති වොහාරඤ්චාභිරොපයි.

> Atíwa khuddakaŋ pubbé Paṇḍawápiñcha káriya.
> Saŋwaḍḍhituchchatáyáma wittháratthira pálikaŋ,
> Abbhunnata maháwáripátaŋ sajala niggamaŋ,
> Parakkama samuddoti wohárañchábhirópayi.

"Moreover, having made *Páṇḍa-wápi* (Paṇḍa tank), which was formerly very small indeed, (into one) containing a body of water great and exceedingly lofty, having outlets for the water, and an embankment of greatly increased height, length, breadth, and strength, he gave it the name of the 'Sea of Parákrama.'" *

---

* [It is somewhat remarkable that the above important passage in the Mahάwaŋso should have escaped Mr. Turnour's researches, since he gives the following account of the outlets from the "Sea of Parákrama," which is quoted by the authors of the Report of the Ellahara Canal. "The King [Parákrama] formed the deep canal called the Makara-gaŋga, which flowed from the Makara outlet of the sea of Parákrama ; from the same sea, the great canal Hema-watí flowing to the Mahá-megha-wana. From the outlet called Samanmal, the canal distinguished by the name of Níla-wána : flowing from the outlet called the Kilá-karu-udyána the Salalawattí Canal : flowing from the outlet celebrated under the name of Waítra-watí, the Waitra-watí Great Canal : from the southern outlet, the Tuŋga-badsa Canal : flowing from the Maŋgala outlet, the Maŋgala-gaŋga Canal flowing from the eastern outlet, the Champa Canal ; flowing from the same sea to the Púrṇawardhana Tank, the Saraswatí Canal : flowing westward of that (Saraswatí) canal, the Weṇumatí Canal." No less than ten outlets are here enumerated, as formed by the King to convey, in different directions, the accumulated waters of the tank named after himself. Of these, four appear from their names and description to have been much larger than the rest. The identification of "the Sea of Parákrama," therefore, seems to depend upon the discovery, in Padavil-kuḷam, or any other of the large tanks, of ten outlets corresponding with those mentioned in the above extract.—*Ed. Ceylon Almanac*, 1857, in which work this article was by permission inserted.]

I am not prepared to say what particular tank is meant by *Paṇḍa-wápi*, in this passage, as I have not been able to meet with any information, either in the Maháwaṉso or in any other work, which would enable me to identify it with any degree of certainty. The name *Paṇḍa-wápi* occurs but twice in the previous part of the Maháwaṉso. King Mahádáṭhiko Mahá Nágo is said to have bestowed the "*Paṇḍa-wápi Vihára*," i. e. 'the Paṇḍa Tank Vihára,' on a certain Sámaṇero, which proves the existence of a tank of that name so early as A. D. 8. (*vide* Turnour's translation of the Maháwaṉso, p. 214.) The next reference to *Paṇḍa-wápi* is in the 60th Chapter of the Maháwaṉso, in which it is mentioned as one of the tanks constructed, or prepared, by King Wijaya Báhu I.,* who reigned at Polonnaruwa A. D. 1071—1126. I am, however, inclined to think that we may recognize the *Paṇḍa-wápi* of the Maháwaṉso in the modern *Paḍavi*, or *Paḍavil-kuḷam* of the Wanni district.

The reasons which have led me to form this conjecture are, first, the similarity, or rather the identity, of the names; for the Páli word වාපි, *wápi*, and the Tamiḷ word குளம், *kuḷam*, erroneously spelt *Colom*, both mean 'tank' so that in fact the Páli term *Paṇḍa-wápi* is an equivalent for the Tamiḷ, *Paṇḍa*

---

* As this part of the Maháwaṉso has not been translated into English, I annex a translation of the verses relating to works of irrigation in this reign.

"The tanks of Mahaheli, Sareheru, Mahá Danta, Kaṭunnaru, Paṇḍa-wápi, Kallagalla, Eraṇḍagalla, Díghawatthu, Maṇḍawáṭa, Kittaggabodhi Pabbata, Waláhassa Mahádáragalla Kumbhílasobbha, Pattapásána, and Káṇawápi, as well as many other tanks whose embankments had been in ruins, did the King build (and repair,) ever intent on the welfare of the poor. The ruler of the land having constructed embankments (to prevent inundation) in many rivers, streams, in various parts (of the Island) rendered the country abundant in food. Having also constructed the canal Tillawathu, which had been in ruins, he filled the tank of Maṇihíra (Minnery) with water."—*Vide* 60th Chapter of the Maháwaṉso.

or *Paṇḍi-kuḷam*,* which may have been corrupted into *Paḍavi* or *Paḍavil-kuḷam* ; secondly, the stupendous size and magnitude of the work.

Sir Emerson Tennent, who gives an interesting account of this tank in his work entitled "Christianity in Ceylon," calls it "*the largest as well as the most perfect of these gigantic works in Ceylon*," and speaks of it in such terms as would not be inappropriate in describing such a tank as the "Sea of Parákrama" must have been.

But the most interesting account, as well as that which gives us the loftiest ideas of this gigantic work, is that contained in the Governor's Minute on the Eastern Province.

His Excellency says : "It is the most wonderful work that I have yet visited, whether we look to size, difficulties of execution, or to the time at which these difficulties were surmounted..........North of these again, about 40 miles, is *Paḍavil-kuḷam, the most gigantic work of all*, for the bund, which is in perfect repair, (except at the one spot where in the course of ages the waters have forced a passage between it and the natural hills which it united,) is 11 miles long, 30 feet broad at the summit, 180 feet at the base, and 70 feet high......*Paḍa-vil-kuḷam*, the greater part of which I rode or walked over, was formed by the waters of the rivers Mora-oya and Muń-gunu-oya, confined to the plain, by the enormous bund which I have just described. *Its construction must have occupied a million of people for 10 or 15 years.*"

The most satisfactory way of settling the question as to the identity of this tank, would probably be by obtaining a facsimile and translation of the inscription, to which Sir Emerson Tennent thus alludes in his note on the tanks already referred to.

---

* I am aware of the existence of another "Great Tank" bearing the name of *Paṇḍi-kuḷam* in the U'va district, but being situated in the *Ruhuṇu-raṭa*, it could, I think, be scarcely regarded as the *Paṇḍa-wápi* of the Maháwaṇso, if, as I infer from the context, it was constructed during the period, when Parákrama Báhu, was *Mahádi-pádo*, or king of *Pihiṭi-raṭa*.

"On the top of the great embankment itself, and close by the breach, there stands a tall sculptured stone, with two engraved compartments, that no doubt record its history, but the Uḍaiyár informed us that the characters were Nágari, and the language Páli, or some unknown tongue which no one can now read."

I have only to add, that my object in submitting the accompanying translation is by no means to advance any hypothesis of my own on this subject, but simply to put parties competent to decide on the point in possession of the data contained in the hitherto untranslated part of the Maháwanso, and especially to aid the investigations of those gentlemen whose meritorious labours have already invested the subject with so great an interest.

---

## CHAPTER LXVIII.

This Sovereign of lofty aspirations, who was well acquainted with foreign countries, thus thought within himself :

"In what well-governed kingdom is the administration of affairs conducted without obtaining a knowledge of its means ?

"The object of my sovereignty is the advancement of the prosperity of Religion and the State, having vanquished all enemies. This kingdom, although very small, being filled with great prosperity, I shall by the superiority of my wisdom, soon bring into such a state as that it will surpass the greatness of other kingdoms.

"Conferring appointments on my officers, whose advancement is identical with my own, according to their respective merits rewarding them with honors and wealth ; causing my own people to settle in various parts within my dominions, from the mountain *Samanta-kúṭa* (Adam's Peak) as far as the sea coast, the cultivation of grain should be carried on in as many ways as possible."

Having thus reflected, the King thus addressed his officers :

"In my kingdom are many paddy fields cultivated by means of rain water, but few indeed are those which are cultivated by means of perennial streams and great tanks.

"By rocks, and by many thick forests, by great marshes is the land covered.

"In such a country, let not even a small quantity of water obtained by rain, go to the sea, without benefiting man.

"Paddy fields should be formed in every place, excluding those only that produce gems, gold, and other precious things.

"It does not become persons in our situation to live enjoying our own ease, and unmindful of the interests of the people. And ye all, be ye not discouraged, when a necessary, but a difficult work is on hand. Regard it not indeed as a work of difficulty, but following my advice accomplish it, without opposing my instructions."

The highly renowned Monarch then ordered the construction of the great embankment celebrated under the name of *Koṭṭha-baddha*, which had long been swept away by the action of the river, leaving behind nothing but the name, and which indeed had baffled the attempts of former Kings to keep in repair.

Whereupon the ministers, one and all, represented in various ways the extreme difficulty of the work, and the instability of it, even if it could be accomplished.

The King rejecting their counsels, remarked :—"What is there that cannot be done in this world by men of perseverance? Is not the tradition still current that Ráma built a bridge over the great ocean itself, by means of monkeys?*

"If I am destined by fortune, to reduce this Island under one regal canopy, and to promote the welfare of the State and Religion, then, indeed, will the commencement of the work see the accomplishment of it also."

Thus did he of great courage inspire his ministers with courage.

Before the construction of the embankment, however, the profoundly wise ruler of the land made, from the mouth of the embankment, as far as the country of *Ratthakara*, a great canal of great breadth and strength, and of many *pórisas* † in depth.

The Protector of the land, having assembled a great many stone cutters, workers in metal, iron-smiths and gold-smiths in the country, and having

---

* In reference to the fable in the Rámáyaṇa, that Ráma, the conqueror of Ráwaṇa, in crossing over from India to Ceylon, caused a bridge to be built over the sea, by his army of Wánaras or monkeys. The reef of sunken rocks which extends across the Gulf of Maṇṇár from Rámisseram on the coast of Coromandel to Talaimaṇṇár on the coast of Ceylon, is supposed to be the remains of this bridge.

† "The measure of a man's reach.......Equal to the height, to which he reaches, when elevating both arms with fingers extended." (See Colebrook's *Amarakosha*, p. 160.)

employed them in the work of cutting stones, got made by them an embankment of great stability and solidity, having the interstices of the stones invisible, like one continued sheet of rock, and having the work of plastering complete.

On the summit of the great embankment, the pious Rájá placed a *Bò* tree, an image house, and likewise a dágaba.

The King, by means of this canal, so directed the course of the stream as to make it discharge itself into the sea.

Having cleared the great jungle on both sides of the canal, he formed paddy fields of many thousands of Wáhas* of extent and converted the place in truth into a *Koṭṭhabaddha*, according to the literal meaning of the term, from the fact of its having *Koṭṭhabaddhas*,* 'perpetual granaries,' from the two Páli words *koṭṭha*, 'granary,' and *abaddha*, 'perpetual.'

Thereafter the King having dammed up the mouths of the rivers *Sankhawaḍḍhamáná*, and *Kumbhílawána*, as far as the *Súkara Nijjhara*† (literally 'hog-cascade,' or 'stream,'); and there too, having made a canal, and conducting the water into the tank of *Mahádáragalla*, thoroughly repairing, at the same time, the breaches thereof, including the clearing of the water-courses, (thus) brought it into a larger body of water than it had before, and having formed paddy fields from this place as far as the *Súkara Nijjhara*, collected paddy.

---

* According to the Páli Nighaṇḍu of Moggállana.

| | | |
|---|---|---|
| 4 Nẹlis | make | 1 Lahasa (or Kuruṇi |
| 4 Lahas | ,, | 1 Droṇa |
| 4 Droṇas | ,, | 1 Marika |
| 4 Marikas | ,, | 1 Khári or Amuṇam |
| 20 Kháris | ,, | 1 Wáha |

† This is no doubt the *Koṭṭa-vélla* of Brook. The Siṇhalese word, වේල්ල, *vélla*, and the Páli word බඩ, *baddha*, both mean 'embankment.'

"From *Koṭṭa-vella* to Dástoṭa, a distance of 9 miles, the country is one of the most delightful I ever recollect seeing on this Island, nearly the whole distance a carriage might drive; there are strong marks of the plains and parts of the open country having been cultivated, it abounds in tanks and ravines to facilitate irrigation, all of which are neglected and broken. The reason the inhabitants assign for this, is want of people, and money to keep them in order. (Route from Mátale to Trincomalie, by way of the Ambaṇ-gaṇga, by R. Brook, Esq.)

‡ Instead of "යාව සූකර නිජ්ඣරං" "as far as the Súkara Nijjhara" some MSS. read "ඨානං සූකර නිජ්ඣර," "the place Súkara Nijjhara." If this be the correct reading, the whole passage might be thus translated: "Thereafter the King having dammed up, at the junctions of the rivers Sankhawaḍḍhamáná, and Kumbhílawána, the place called Súkara Nijjhara, &c."

The King, moreover, having made a collection of water in the middle of the river *Jajjara* (Ḍeduru-oya ?) and having formed paddy fields, collected vast quantities of grain.

Moreover, having made *Paṇḍa-wápi*, which was formerly very small indeed, (into one) containing a body of water, great and exceedingly lofty, having outlets for the water, and an embankment of greatly increased height, length, breadth and strength, he gave it the name of the "Sea of Parákrama."

In an island situated in the middle of it, on the summit of a rock* the King built a *Dhátu-gabbho* (Dágaba) resembling the peak of Mount *Kaíldsa*.

In the middle also of the tank, he built a Royal Palace three stories high, and of superlative beauty : a palace indeed for the collected joys of the world.

The following, and many other ruined tanks and mountain streams did this benevolent monarch repair, in various parts of his dominions, viz., the tank of *Mahágalla*,† the tank of *Seṭṭhi*, likewise that of *Chhattunnata* the tank of *Tamba*, and the tank of *Ambawala*, the tank of *Giribá*, the tank of *Paṭala*, the tank of *Maṇḍika*, the tank of *Mórawápi*, and the tanks of *Sadiyaggama* and *Tilagulla*, also the tank of *Malawalli*, the tank of *Kálikittakaṇḍaka*, the tank of *Kanikaragalla*, and the mountain stream *Buddhagama*, the tank of *Súkaragama*, ('the village of hogs,') the tank of *Maha-kirala*, the tank of *Giri*, aud those of *Rakkhamana*, *Ambála*, and *Kaṭunnaru*, the tanks of *Jallibáwa* and *Uttarála*, and that of *Tintiṇigama*, ('the tamarind village,') the tank of *Dhawalawitthi*, *Kira-wápi*, and *Naḷannaru*, the tank of *Karawiṭṭhawilatta*, likewise that of *Dumbaragama*. The tanks of *Múnaru*, and *Salakas*, and also the tanks of *Múlawári*, *Girisigama*, *Polonnarutala* and *Wisiratthala*.

Draining up great marshes, in the country of *Panchayójana* (*Pasyódun*, or Pasdun-kóralé,) he formed paddy fields, and collected paddy.

Allotting lands for paddy cultivation in the jungles there, and in many other places, calling together the village chiefs, he caused the inhabitants to engage themselves in the cultivation of paddy.

---

* I am informed by Mr. Braybrooke, who has visited *Paḍavil-kuḷam* that there is a rock in the embankment, called by the natives දෙවියන්නේ කඳ, *Deviyanné-kanda*, "God's Hill," or "King's Hill," which they believe is haunted by the spirit of King Mahasen, to whom tradition ascribes the construction of the tank.

† I have no means of ascertaining the Siŋhalese names of these tanks. If we had a list of them in Siŋhalese, we might probably identify most of them.

In this manner, having augmented nine-fold the revenues of the State from what they were, the wise King caused the country to be so prosperous as never to know the calamities of famine.

He, who was so skilled in the maxims of Government, wishing that there should not be even a small spot of land within his dominions inhabited by men, which should be left unbenefited, formed many pleasant and delightful gardens and groves, full of fruit-bearing and flower-bearing trees and creepers of every variety, fit for the use of man.

Thus did this sagacious Ruler of the land, cause his small kingdom, which had attained prosperity, by the superiority of his wisdom, to surpass other great kingdoms in affluence.

The 98th chapter of the Maháwaṇso, entitled "the Advancement of the Prosperity of the Kingdom," composed both to comfort and to afflict righteous men.

---

## *Extract from* CHAPTER LXXIX.

This supreme of men, for the purpose of averting the calamities of famine, constructed many tanks and canals in various parts of the Island.

Having turned the course of the river *Kara-gaṇga** by means of a great stone embankment, and having by means of a great canal, called *A'kása-gaṇga*, 'Celestial river,' conducted its broad stream to the Royal Palace, which was a noble one, resplendent like the sun,† he constructed the "King of Tanks," (*Wápi-rája*) celebrated under the name of the "Sea of Parákrama," which was like unto a second ocean, and which contained a perpetual supply of water.

He likewise built the great tank known by the name of the "*Lake of Parákrama*," having an inaccessible stone aqueduct of 100 cubits. Also the tanks of *Mahinda*, *Ekáha-wápi*, (literally) "the Tank

---

* Major Forbes states that the river *Ambaṇ-gaṇga* is joined "by a considerable stream," called *Kaḷu-gaṇga*. Might not this be the *Káragaṇga* alluded to here? The Páli form of *Kaḷu-gaṇga* would be *Kála-gaṇga*, the only difference between it and *Kára-gaṇga* being the substitution of the letter *l* for *r*.

† Instead of, "which was a noble one, resplendent like the sun," ("වරභාසුරදීපකං") some MSS. have "අකාභාසුරදීපකං," which may be translated "making a shining or splendid Island."

of one day," the *Ságara* ('Sea') of Parákrama,* and the waterfall of *Koṭṭhabaddha.*

In many places, the chief of men, built minor tanks in number, one thousand four hundred and seventy-one. The Ruler of the land constructed conduits, and channels of stone, in no less than 300 tanks which had been in ruins.

The King also repaired many ancient tanks, such as the great tank of *Maṇihíra* (*Minnéry,*) the tank of *Mahádáragalla*, the tank of *Suwannatissa*, *Dúratissa*, and those named *Kála-wápi* (*Kaláwẹwa,*) and *Bráhmaṇagama.* The tanks called *Nálikératthamba*, and *Rehéra*, likewise the tanks of *Giritalia*, and *Kumbhíla Sobbha.* The tanks of *Kana-wápi*, *Pádi* and *Kaṭigama*, the tank of *Pattapásána*, the tank of *Mahaṇṇa*, the tank of *Mahanámamattaka*, the tank of *Waḍḍhana*, and the tank of *Mahadanta*, the tank of *Kanagama*, and the tanks of *Wira*, and *Walahassa*, and that called *Suramána*, the tanks of *Pásánagama*, *Kálawalli*, and *Káhalli*, and those named *Aṇgagama*, *Hillapattakkaṇḍa*, and *Madagu.* These tanks which had been in ruins, did the King restore to their former condition, as well as others of less note, in number 467.

In about one thousand three hundred and ninety-five tanks, did the king, who was a proficient in matters of State, effect repairs and improvements.

[*For the remainder of this Chapter, see Ceylon Almanac, 1834.*]

---

* This is either a clerical mistake, or there were more than one "Sea of Parákrama." While on this subject, I may here notice a very curious passage in the Rája Ratnákara, which speaks of the construction by Parákrama Báhu, of three great tanks known by the names "Mahá Samudraya," "Bana Samudraya," and "Mati" or "Mani Ságara."

This passage is translated by Upham as follows :—"The said king of Ceylon also rendered his fame great by causing to be made in Ceylon three great lakes, the first of which was called Mahá Samudra (*i. e.* allied to the sea,) and the third was called Mẹda Ságaraya (*i. e.* the middling sea.)"

It is however, right to add, that this passage is not fouud in the Saddharma Ratnákara, from which the author of Rája Ratnákara, has copied, almost verbatim, the events of this reign. Nor indeed is such a passage found in any other work on Ceylon, which I have seen.

# TOPOGRAPHICAL AND STATISTICAL ACCOUNT OF THE DISTRICT OF NUWARAKALÁWIYA.

By A. Oswald Brodie, Esq.

---

The district of Nuwarakaláwiya may be described as that portion of Ceylon which is included in the following lines :—

I. One running from a point one mile north of Dambulla to another about five and twenty miles west of Trincomalie.

II. A second from the last mentioned spot to the ninety-fifth mile post south of Jaffna.

III. A third running thence to within six miles of Arippu.

IV. A fourth proceeding thence south-south-east to a place about twelve miles west of Pomparrippu.

V. A fifth joining this last mentioned point with that near Dambulla.

The area of the district is about 2,900 square miles.

According to the last census returns (1852) the population is only 32,103, but this is manifestly erroneous, as there are 10,910 persons liable to the road tax, and the number of able bodied persons cannot well be more than one-fifth of the community. As all these returns are more or less erroneous, (giving the numbers too small, as the headmen persist in omitting numbers of women and children,) we may safely reckon the population at about fifty-five or sixty thousand.

The number of houses appear to be 9,804, which would give $3\frac{1}{9}$th persons to each house, but it must be observed, that headmen frequently apply the term "house" to a range of contiguous dwellings.

The district on the whole is flat, not, indeed, flat in the same sense as the land near Maṉṉár, Jaffna, &c., is flat, but it is not in any sense mountainous ; the general surface consists of gentle undulations, and here and there isolated peaks or short ranges of hills appear. These are most common in lines north-east and south-west of Dambulla, and within twenty or thirty miles of that place, elsewhere they are of rarer occurrence and of less elevation. To the north, south, and south-west, of the station, hills entirely disappear. The southern part of the district forms in fact the extreme northern verge of the great central mountain mass of Ceylon, and the isolated hills are outliers thereof.

The whole face of the country, except where occupied by fields or tanks, is clothed by dense forest ; and a large tract lying to the south, south-east, and south-west, of the station is almost uninhabited. This arises in part from a want of water, and in part, as has been remarked, from the policy of the ancient rulers of the Island, who interposed this barrier between themselves and the marauders who were wont to infest the maritime districts. There is yet another circumstance which probably has not been without its influence: I refer to the intense dislike which the villagers have, to contact with strangers. So strongly does this feeling still exist, that we have even now to take the greatest care not to bring roads too near to villages, as in this case the people invariably abandon their dwellings, and migrate to some neighbouring, but more secluded, spot.

The prevalent rock is gneiss, the colour and structure of which vary considerably in different localities. It is frequently traversed by veins of quartz and felspar ; but no circumstance of interest connected with these has attracted my notice. This gneiss here, as elsewhere, has a tendency to exfoliate in layers concentric to the present surfaces, the plates which thus scale off are of all thicknesses, from two feet downwards. This peculiarity renders it a matter of ease to split off tolerably regular pillars and slabs, and there can be no doubt that this circumstance has had a very considerable influence on the character of the national or adopted architecture.

Imbedded in the gneiss, at various places, one finds magnesian limestone, generally of a brilliant white colour and of a coarse crystalline structure ; occasionally it contains crystals of hornblende, and also orange-red spots, the composition of which I have not ascertained. The stone bears a good polish, and I am now trying it for flooring, a purpose for which it will, I think, be found well adapted, being clean, cool, cheerful looking, enduring, and ornamental. It is only within the last couple of years that the majority of the localities where this mineral occurs has been ascertained, and the discovery happened most opportunely, as numerous public works are in progress or contemplation. Hitherto lime has been brought from Arippu, a distance of forty-four miles.

In the early part of this year, I discovered in the bed of the Kalu-ár, about six miles east of "The Doric," a number of fossil shells and corals converted into a beautiful semi-transparent amber-coloured mass ; the associated nodules of variegated chert also contain numerous petrifactions and casts. I was unable to examine the beds at leisure, and therefore only obtained mutilated specimens, but judging from these, I should think that these limestone strata belong not to the present, but to the tertiary formation.

On a late circuit Mr. Quinton pointed out to me considerable quantities of a dark, heavy, metalliferous stone, which has all the outward appearance of furnace slag. The native tradition is, that it is the refuse from the forges of giants who lived of old ; but as I have since found it in many places, and as Mr. Quinton tells me that it is common over a large part of the Mullaittívu district, I am inclined to hope that it may be a natural product, and have instituted inquiries into the matter.

The soil of the district is generally of a reddish hue, occasionally intensely so, but, where liable to inundation, whether natural or artificial, it is darker and richer. Potter's clay is abundant, but so far as I know, none of it is adapted to the manufacture of the finer kinds of earthenware. The soil, on the whole, is not unfavorable to cultivation.

There are no natural lakes nor thermal springs in the district, nor are there any perennial rivers. The following are the principal streams, which in the wet season contain large bodies of water.

1. The Dambulu and Mirisgóni-oyas, take their rise near Dambulla, and with some others of less importance, empty themselves into the great Kaláwẹwa tank; their united waters on leaving this assume the name of Kalá-oya, which for many miles forms the boundary between this district and Seven Kóralés, and ultimately falls into the sea near Pomparappu.

2. Kalankutti-ẹla and Siyambalaṉgamu-oya, are tributaries of the former, which take their rise some fifteen miles west of Dambulla, and also form, for some miles, the limit between the same two first mentioned districts.

3. The Malwatu-oya; one branch takes its rise from the great Éruwewa tank, is called there Gal-oya, and a little lower down Karunagala-oya; a second branch rises from the foot of Riṭigala-kanda (the first hill in Nuwarakaláwiya) and joins the former a little to the east of the Central road. The united stream flows into the deserted tank of Náchcha-dúwa, which gives it a local name. Still lower down, that is, in the neighbourhood of Anurádhapura, the river is called Malwatu-oya, and flowing to the west-north-west falls into the Kanadará-oya, two miles south of Kappáchchi in the Maṉṉár district.

4. The Kanadará-oya, of which there are two great branches, the Saṉgili Kanadará, taking its rise in Kẹndé Kóralé, and Mahá Kanadará-oya, in Kanadará Kóralé. These unite about three and a half miles west of the central road, and this united stream falls ultimately into the sea, near Arippu, under the name of Aruvi-ár or Pár-ár.

5. The Bú-oya or Pí-ár, rises in Kaḍawat Kóralé, forms for some distance the northern limit of this district, and finally joins the Aruvi-ár.

6. The Yán-oya has its source in the great Huruluwẹwa, and falls into the sea between Trincomalie and Kókilé, being known there as the Kallu-ár.

## Botany, &c.

Though the whole district is covered with jungle, the quantity of useful timber is surprisingly small. In fact this remark is applicable to Ceylon generally, to a much greater extent than many imagine. The fact is to be attributed, mainly, to the great development of the chena system of cultivation, which is hereafter noticed.

The Dutch were, with regard to the protection of timber, and also in some other respects, much more provident than the English have shewn themselves; they planted teak forests—we sell them for a tythe of their value, and then import timber from abroad.

The most valuable timber trees of the district are the following :—Palu, Halmilila, Milila, Satinwood, *Sweitenia chloroxylon*—the Buruta and Wiranda of the natives, Kubuk or Kumbuk (*Terminalia alata*,) Tammanné, Mígaha (*Bassia longifolia*,) Kiri Kón, Ebony.

Of cultivated trees we have the following :

Cocoanut (*Cocos nucifera*), which does not succeed nearly so well as in the maritime districts. The produce does not by any means equal the demand ; the usual rate of exchange is two cocoanuts for one seer of rice. Palmyra palm (*Borassus flabelliformis*); not common, and little prized. Talipot (*Corypha umbraculifera*); seldom met with, except in the south-east part of the district. Jack; rare, though in some villages it bears readily. Mango ; very rare.

Of the smaller fruit-bearing trees and plants, the following are to be met with in gardens ; orange, lime, papaw, pine-apple, murunga, pomegranate, plantain, brinjal, (*Solanum melongena*) ; baṇḍakka, (*Abelmoschus esculentus* ;) tampalá, (*Amaranthus*); patóla, or snake-gourd (*Trichosanthus anguina*); besides a few varieties of gourd, melon, and bean. On none of these is the least care bestowed, and the produce is in every respect inferior.

The following are some of the plants which I have introduced :

Casuarinæ.
Sissu.
Logwood.
American sumach.
Bourbon and New Orleans cotton.
Madagascar plum.
Nam-nam.
Leetchee.
Cape cabbage.
Travellers-tree.
Date.
Dwarf cocoanut.
Double pomegranate.
Various species of stramonium.
Do. plumbago.
Do. roses.
Do. plantains and bananas.
Teak.
Myrtle : with numerous ornamental plants.

For these I am chiefly indebted to Mr. Dyke, Agent for the Province ; to his Assistant, Mr. Twynam ; to Mr. Thwaites, Superintendent of the Royal Botanical Gardens, and to A. Y. Adams, Esq., of Petula.

Of all these before mentioned plants, the natives are encouraged to take seeds, slips or roots.

## Produce of District.

The staple product of the district is paddy, grown in the manner usual throughout the low country, that is, in low, gently sloping lands, irrigated from artificial tanks, some of which are many miles in extent.

Each village is settled by a little colony, headed by two or more leaders or elders, called *Gamarálas.*

After the ground has been cleared of jungle, a line is stretched down its length, then measuring from the bank, marks are put in, say at every ten fathoms, and each portion is given to a villager. If the soil varies greatly in the upper and lower parts of the field, or if one of these be for any reason preferable to the other, then each villager ("shareholder," or "partner," is the common term) will get one share in the upper, and one in the lower part, of the field.

To the *Gamarálas* a double portion is given, in consideration of their superior position as village elders. It is to be observed,

that every shareholder has a right to all the land enclosed within lines running across the field and passing through the two stakes on the centre line which originally marked out his portion; that is, each man, commencing within his own portion at the centre line, may clear to the right and left till he reaches the high grounds which enclose the field; but quarrels would instantly arise if he were to clear either up or down, as it were, round the share of another. So soon as a share is allotted to a man, no matter whether he clears much or little, he comes under certain obligations; he must give one share of work to all repairs of the tank, and to the watching of the fields by night, and to the construction and up-keep of a ring fence. The original division is never lost sight of; thus, if two shares, even though they be contiguous, fall into the possession of one man, he will never talk of having "one large share," but of having "two shares," and will give two shares' work to watching, fencing, and repairing of the tank; so it is also with half or quarter shares.

The first and last shares, those at which the channel from the tank enters and leaves the field, are generally less productive than others. For this reason, and also because there is a larger quantity of fencing there, these shares, called the *ihala* and *pahala ẹlapaṭa* (shares at the upper and lower water-courses) respectively, are invariably larger than the rest.

It frequently happens, that either before or after sowing, it is found that the supply of water will not be sufficient to irrigate the whole field; in such cases the people resort to a practice called *betma* or "division." A portion of the field, of suitable size, is selected, and all the rest is abandoned. The selected portion is now divided into the same number of equal shares as there are original shares in the whole field, and every original shareholder gets one *betma* share for each original share in the whole field; and this in no way depends on the amount which he has cleared in his original share. Thus, suppose a man through idleness has not cleared any of the ground allotted to him, but has yet given, when required, labour to fencing, watching, and repair of tank, then when *betma* is

resorted to, he will be entitled to a *betma* share, equal to that of his neighbours. It is to be observed, that the persons whose land is thus selected, do not get larger allotments than others. Frequently, the selected portion of land is worked in common, and the produce divided among the peasants according to the number of shares which they hold in their own right; at other times, it is actually subdivided, and each reaps the produce of the portion allotted to him, just as if it were his own ground.

Each such *betma* arrangement is binding only for one crop; when it has been removed, matters revert to their original position.

Other customs connected with paddy cultivation, are as follows :—

If a man's *betma* share is denied to him, then he has a right to demand a supply of water for his original share; if he insists upon this, it would in many cases happen that both his and his neighbours' crops would die; an amicable arrangement is therefore generally made.

If a man refuses to give his due share of work or money to the repair of the work, he cannot lead water to his field till he has repaid those who laboured for him.

If owing to neglect, as to fencing or watching, cattle or elephants damage the crops, then the man in fault must make good the loss.

If a man, after being warned that his cattle tresspass, fails to yoke them two and two, or else to tie cross bars to their necks, he is liable for all damage which they do.

If shareholders neglect to cultivate their fields for any particular crop, then those who do cultivate are entitled to select and to cultivate contiguous lands equal in extent to their own; the object of this is to lighten the labour of watching, fencing, and irrigation, which would become very harassing if the cultivated portions of the field were isolated.

Several of these rules appear to me admirably adapted for the people and country. The people are naturally lazy;

here are stimulants. They are poor, and have not a sufficiency of wholesome food; here is security for the land being cultivated by some one.

There are certain privileges attached to each village, as for example, the collection of honey throughout all the jungle attached to it; one-half of the game killed; one out of every two tusks "bagged" in these; and the right of fishing the tank. All these rights give rise to constant squabbles.

The chief varieties of paddy cultivated in the District are:

*Dik-vi*
*Ilankáliyan* } ; in virgin soil.

*Mahá-vi*; for *táwalu*, as it does not die though overflowed.

*Ẹl-vi* (*sudu* and *kalu* "white" and "black,")
*Kuru-vi.*
*Hinaṭi.*
*Muruṉga-vi.* } for paddy fields.

These vary in colour, size and taste. Their most important distinction, however, refers to the length of time which they require for attaining maturity; some take three, some four, some six months.

There are two crops annually; that sown in December and reaped in March or April, gives the *Yala-mósama* in August and September. Occasionally, when the weather is favourable, and the preceding harvest has been lost, a crop is taken between the intervals, and is simply called "a between two years crop" *dẹwurudda ataré mósama.*

The return from paddy fields according to the reports of the headmen, varies from four to ten-fold; but there can be no doubt that the crop is frequently much heavier than this would induce one to suppose.

Another method of cultivating paddy is called *tawálu;* in this case the margins of the tanks themselves are cultivated, and the water for irrigation is raised by means of scoops, such as are in use at salt pans. This system gives larger returns

than field cultivation, but the requisite labour is greater, therefore it is not in favour with the Sinhalese ; the Moormen carry it on to a considerable extent.

A third system of paddy cultivation is on elevated ground, so called, high lands, in exactly the same way as other chéna crops are grown ; in this case irrigation is not applicable, and the crop is totally dependant for moisture on the natural fall of rain. The return is large, but the risk of losing one's labour is great.

I am sorry to say, that the general food of the people is not rice, but *kurakkan* (*Eleusine coracana*) which is grown in chénas. These are pieces of land on which the smaller trees and brushwood are cut down and burnt, the thicker branches are in this way merely charred, and being piled round the enclosure, form a tolerably good fence. The seed is sown broadcast, and then covered slightly by aid of that useful implement, the mamotie. A man can sow and cover about a seer of *kurakkan* seed in a day. It rarely occurs that more than two crops are taken from one chéna ; after the last of these has been removed, the jungle is allowed to grow up, and is not again cut till after the lapse of from five to fifteen years. It is evident that this system must prove most destructive to timber, as new land is cleared every year.

In these chénas various other plants, such as millet, &c ; as also varieties of gram, &c., are cultivated. One of the most useful of these, so called, fine grains, is the *tala* of the Sinhalese (*Sesame Sesamum Orientale,*) which yields [illegible] used for lamps and in medicines. The price of [illegible] about a penny per seer and large quantities [illegible] *tavalam* people from the low country [illegible] Trincomalie and [illegible] cultivating this grain, and if an English [illegible] make arrangements for purchasing it here, or at the neighbouring ports, the cultivation might be increased to a great extent.

Cotton is also grown in chénas, the seed being placed in the ground along with that of *kurakkan*, which grows faster, and is removed ere the cotton has approached maturity. The extent of such lands are always estimated by the quantity of seed *kurakkan* required ; and about four seers of cotton seed are sown with one of *kurakkan*. The cotton is sown about October, before the monsoon rains set in ; the pods begin to burst in about eight months ; and during the three following months the produce is gradually removed. If the plant be cut down at the close of the season, fresh shoots appear, and a second crop equal to the first is obtained, if the soil be good. From certain memoranda, collected by a predecessor about fourteen years ago, I glean the following information regarding a piece of cotton soil.

It measured eight seers of *kurakkan*, which, as before shewn, is equal to thirty-two of cotton. A man was employed forty days in cutting down the jungle, twenty more in lopping, and twenty-five in burning it, and removing the rubbish. The soil being good, the plants attained a height of six feet. This chéna yielded 30 *welis* of cotton in the first season, and this was about four bullocks' load, worth 6s. 8d., per load. The cotton is sold with the seeds unremoved.

One person will, in a day, clear a *welli* from its seed, and in four days will spin it into thread. This quantity is sufficient for a piece of cloth ten cubits long, and four spans broad. A weaver will complete this in three days, and receives in payment one and a quarter parras of *kurakkan*, or half this quantity of paddy. It is to be observed that there is not, and never was, a tax on cotton cultivation, so the above information may be looked upon as tolerably correct. From it we learn, that, in 1838, a man's labour was freely given during at least eighty-five days to the working of a chéna, the produce of which sold for £1 6s. 8d., which would give about 3¾d. per diem ; but the cultivator, after reaping his *kurakkan*, had to watch the cotton for nearly seven months, and had to collect, dry, and pack the produce.

At present, the people seldom get more than 3s., for a load of cotton ; this is attributed to the vast quantities of cloth now imported from India and England.

Being anxious to multiply as much as possible the varieties of plants on which the people depend, I applied for, and obtained from Government, two sacks of Bourbon and New Orleans cotton seed, which I am now distributing among the people, who, however, shew their wonted apathy on this occasion also.

High forest land is invariably selected for cotton.

Tobacco, when grown at all, is only found in small gardens, containing forty or fifty plants.

With regard to chénas generally, it must be observed, that, unlike paddy fields, they belong not to individuals, but to villages collectively ; and it is by amicable arrangements among themselves, that it is in each season arranged what portion shall be allotted to each man. As a general rule, all land from which water drains to the tanks or field of a certain village belongs to that village ; and to its inhabitants is reserved the right of cutting chénas within the limits so defined.

For some reason, which I do not know, chénas are not portioned off by parallels, but by radiating lines from some central spot, such as a large tree, boulder, &c.

## Inhabitants.

The mass of the inhabitants are Sinhalese, approximating in manners, feelings, and appearance to the Highlanders, and not to the degenerate race which swarms in the maritime districts, and for whom they entertain a thorough contempt. Every man is a cultivator or proprietor of land, and I do not suppose that there is one Sinhalese villager who is to any extent dependant on a trade for livelihood. Many persons are by caste mechanics, as blacksmiths, goldsmiths, washers, tom-tom beaters, &c., but the last two bodies alone devote any attention to their hereditary business, and even their reward consists not in money, but in land ; thus the people of a village will give a piece of land to some dhobies on condition that they

wash for them and attend on occasions of ceremony; so it is with tom-tom beaters. If a man wishes to get a new axe or mamotie, he first of all goes to Trincomalie, Anurádhapura or Maṉṉár, and purchases some iron; he then prepares a quantity of charcoal, and taking these, proceeds to some neighbouring blacksmith, who is brought into good humour by the gift of some cakes, &c., and is perhaps ultimately persuaded to undertake the work, which, however, proceeds slowly and gravely, several days being occupied in working and talking about the work: all this time the applicant renders assistance to the smith. I have never been able to induce a village mechanic to settle here; they like receiving money wages, but cannot bear regular hours. Of late, in consequence of public works being commenced, a few masons and carpenters are to be found at the station; but all are strangers to the district.

To shop-keeping of every sort, the highland Siṉhalese have an insuperable objection, and thus it occurs that the boutiques along the roads are all occupied by Tamils, Moormen, or low-country people. It is only in such situations that boutiques are to be found. In the villages themselves they are unknown; each man grows his own paddy and *kurakkan*, has his own cattle, and probably cultivates a few vegetables in his garden. If he wants a new cloth, he gives the cotton from his chéna, and also some grain by way of fee to a weaver, or else he barters the product of his field with some passing trader.

Until of late years, bare money was almost unknown in the district, but is now becoming more common every day. In all dealings among themselves, however, the natives adhere to the system of barter. The change already referred to, may be attributed chiefly to the fact that payment of taxes in kind has been done away with, and that the taxes in themselves are heavier. I am quite aware that many persons consider it an absurdity to maintain, that people can be better off simply because they are taxed, because money is taken from them; such is, however, the simple fact. The manner in which it works is probably thus:—A man knows that he will shortly have to pay to Government a couple of rupees; none of his

neighbours will pay him for anything in cash, he therefore finds it necessary to grow something which he may sell to strangers, and he soon discovers that, *cæteris paribus*, the less bulky these goods are the better, after providing for the daily wants of himself and his family; he will therefore clear a chéna and cultivate, say *sesame*. The produce he then removes to Trincomalie, and sells for cash. He now finds that the sum he has received is greater than the amount of tax which he must pay, and in wandering through the bazaar his fancy is struck by some gaudy handkerchief, some bright brass vessel, some china, &c.; he buys the article and returns home. The sight of these purchases gives pleasure to his household, and creates in them new desires and new wants. To gratify and relieve these, he will in the next seasen clear a still larger chéna, and so the process continues. The increasing influence of money is strikingly apparent in the instance of headmen and people of family, who now care much less than heretofore about keeping up large bodies of dependents. In a paper on the statistics of the Puttaḷam district, which I had the honour to transmit to the Society some years ago, I shewed that the fishers there were most anxious that the now discontinued fish-tax should be renewed; and, on the whole, I believe, that at present the people ought to be comparatively heavily taxed, not indeed to such an extent as to discourage them, but to such that they may be incited to industry.

The castes are the same as those in other districts, with this exception, that there is one here not general over the Island, and which is superior to that which is elsewhere considered the highest—I mean the Wanni caste, who call themselves *Wanniwaru*, the latter being a mere honorific. These persons are the descendants of certain Tamiḷs who came over from the continent in the time of Rája Sen, who granted to each extensive tracts of land. They are very numerous here, and very troublesome, as they will not accept any inferior appointments, and for the most part think it quite beneath their dignity to educate themselves. As their claim to fill all the high offices has been rejected, they now frequently intermarry

with Vellálas, and will in all probability soon be incorporated with that caste.

Considerable numbers of domesticated Veddás are to be met with, but none of those who still retain their primitive wildness reside in the district.

Six or seven villages of the Eastern division are inhabited by a set of people who have much the look of Moormen. If asked to what caste they belong, they reply: "We are from *Kurunégala habáge.*" Their neighbours call them "*Wageyei,*" a name which they do not at all like. They do not intermarry with the people of the district, aud seek for wives either in their own villages here, or in those of their comrades in Seven Kóralés. They preserve a tradition, that many centurirs ago their forefathers came from Málwar, but do not know where that place is. They seem to be a sort of Duriyás.

The Moormen or Mahomedans occupy numerous villages; they are locomotive, enterprising, fond of trade, and very deceptive. Their love of money is a perfect disease; they are more robust, intelligent, and bold than the Sinhalese, and are very much disliked and feared by them.

Many individual Tamils have settled in the district, but I am not aware that any one village is exclusively occupied by them.

A few Kaffres and Malays occur here; the former chiefly discharged soldiers and their offspring; the latter, people, who, as I believe, have some very good reason for living in secluded spots.

Two circumstances exercise a most beneficial effect on the people; the first, that for the last three years there has not been a single tavern in the district; the latter, that there are no resident proctors. Of course I do not mean to deny that many proctors may be good and honest men, nor that such are very useful; but it is evident that proctors who would settle in such a district as this, must be the very refuse of their profession, and such men would be a curse to the district.

## Education.

About eighteen months ago an English school was set on foot, and is still maintained. Owing to the liberality of Government no fees are demanded from the scholars, it being considered that the people must first learn what education is, before they are asked to pay for it. The number of scholars is only 13, but when a sort of boarding house now in contemplation shall have been constructed, the number may be expected to increase considerably.

A Tamil school, supported by private funds, is attended by a few scholars, but there is a constant succession of new faces; —so soon as a boy can read a little and scrawl his name, he sets up a boutique.

The best effects have followed from the strict examination to which applicants for headmanship are subjected, as to their proficiency in reading, writing, and arithmetic. In the latter respect, the progress is most marked, and has been assisted by the distribution of suitable books of instruction.

This being one of the most sacred spots of Ceylon, it might be expected that I should have much to say regarding the Buddhist priesthood. This, however, is not the case; the priests here are ignorant beyond description; know nothing of their own history or religion: and though they say that they have a copy of the Maháwaṇso, acknowledge that they have never read it. As they do not take the slightest trouble with the people, and generally disappear until the time of the festivals approaches (at which period offerings to a large amount are brought in), the people are heartily wearied of their yoke, and if no external aid be afforded to the religion, it will soon be practically extinct.

I confess to having an extremely low opinion of the Buddhist priesthood. To judge from those whom I have met (the number is not small), I think they will be found idle, selfish, inconsistent and, *ex-officio*, discontented.

## Means of Communication.

There are no navigable or perennial rivers, and no canals in the district ; and the trade of the country will not for a long time to come justify Government in altering this state of matters. Up till the year 1845, the only road in this district was that from Maṉṉár to Anurádhapura, along which the tappal has hitherto been carried. About the period mentioned, a sudden advance was made ; a great central route passing from north to south, and opening the communication between Jaffna and Kandy, having being surveyed and cleared ; others leading to Trincomalie and to Puttalam were also opened, so far as they lie within this district.

That most excellent of laws, the Road Ordinance of 1848, has here, as elsewhere, effected much good ; it is only necessary to remark, that the following works have been carried out within the last three years :—

I. The central line between Jaffna and Kandy has received general and extensive repair.

II. A substantial bridge, with three water-ways, has been constructed over the Saṅgili Kanadara-oya.

III. The Puttaḷam road has been brought into such a state of efficiency as the present nature of the traffic requires.

IV. Similar improvements to the Trincomalie road have also been carried out.

V. The Maṉṉár road has received general repair, though no permanent bridges have been made.

VI. A road between Madawachchi on the central, and Horowepotáne on the Trincomalie road, has been surveyed, traced, and cleared throughout its whole length, though a few miles are still not available for cart traffic.

VI. Another line joining Kekiráwe on the central, with Má á-gahawẹwa on the Puttaḷam road, has been surveyed, traced, and opened, throughout about 24½ miles of its course

VIII. A line joining Mahákekiráwe with Horowepotáne, (both as abovementioned,) has also been traced.

IX. And lastly, a line from this to the Maṇṇár road near Adapaṇkuḷam, has been surveyed, and in a great measure traced.

The whole amount collected during each year since 1850, is as follows :—

| Year. | No. liable. | Value in Money. | | |
|---|---|---|---|---|
| | | £ | *s.* | *d.* |
| 1850 | 10,117 | 758 | 15 | 6 |
| 1851 | 10,923 | 819 | 5 | 6 |
| 1852 | 10,910 | 818 | 5 | 0 |
| Total... | 31,950 | 2396 | 5 | 0 |

It will be observed, that the rate of commutation fixed for six days' labour, is only 1*s.* 6*d.* This is just half of the real proportion ; but this arrangement was purposely adopted, on the supposition that hired coolies do more work than statute labourers ; besides which, this system enables one to concentrate one's efforts on such roads as most immediately call for attention. I think, however, that these advantages have been over-estimated, and that the rate of commutation should have been higher.

Of late years, a good deal has been said about the desirableness of giving to the natives Municipal privileges, and it was hinted that the Road Ordinance was but the first step in that direction. In those districts with which I am best acquainted, the hopes of the Progressists have been woefully disappointed ; the people frequently not shewing the slightest interest in the elections ; not recording their votes ; not even taking the trouble to attend.

There being little trade in this district, and the people having a great dislike to strangers and to bustle, the Road Ordinance is even now far from popular; but the more intelligent villagers are becoming convinced of the advantages which it secures to them.

## Climate.

Some one said long ago, that the climate of Nuwarakaláwiya was very deadly—that the place was a second Sierra Leone; and no amount of proof to the contrary has yet dissipated this absurdly erroneous opinion. It is quite possible, that twenty or thirty years ago, fever was more prevalent than at present; but I do not know of anything to warrant the conclusion, that even at that time it was unhealthy during the greater part of the year. Situated in a vast plain, which is covered with dense wood, and in which there is a multitude of neglected tanks, the place is certainly no sanitarium, but still I think that during nine months of the year, it is fully as healthy as most stations. The unhealthy season lasts from the beginning of December till the end of February, and during this portion of the year the establishments are allowed to remove elsewhere. As the jungle around the station becomes cleared away, and as the place becomes more healthy, the furlough allowed is gradually circumscribed, and in the course of a few years, there will probably be no occasion for an annual interruption of public business. The fever of Nuwarakaláwiya is distinguished less by the violence of sudden isolated attacks, than by its insidiousness and long continuance. One is never very ill, but neither is one ever very well; one feels a general listlessness, a sensibility to the effects of draughts, which gradually debilitates one to a lamentable extent.

It is a common remark of the people, that draughts are much more common now than they used to be twenty or thirty years ago, and this is—justly, as I believe,—attributed to the great extension of the chéna system, whereby pools, springs, and marshes are dried, and large surfaces exposed to the burning rays of the sun. I regret to say, that my manifold engagements, and

frequent absence from the station, have prevented me from making any regular meteorological observations.

## ANTIQUITIES.

Nuwarakaláwiya has a degree of local celebrity, from having, during many years, been the residence of the Sinhalese Rájas.

We learn from the Maháwanso, that Prince Wijaya established himself at Tambapanni or Tammannaḍawiya, near Puttaḷam, about the year 543 B. C. His successor, in 504 B. C., removed to Wijitapura in this district. Paṇḍukábhaya who followed in the year 474 B. C., took up his residence at Anurádhapura; and from this time till A. D. 729, Anurádhapura continued to be the metropolis of Ceylon. About the year 307 B. C., the *thero* ('saint') Mahindo, son of Dhammáṣoka, Emperor of India, introduced Buddhism into Ceylon. It was then that the branch of the sacred *Bó-gaha* (*Ficus religiosa*) was brought to, and self-planted at, Anurádhapura; and here, enclosed in a triple terrace of masonry, it still exists, and still attracts annually thousands of pilgrims from all parts of the Island, and occasionally also from India, and even from Siam; and it is here that the yet venerated Duṭugemunu, about B. C., 161, expended a vast amount of labour in erecting those bee-hive shaped edifices called *dágabas*, *chaityas*, or *thúpas*, which enshrine relics of the philosopher Buddha; and which, though time has impaired the symmetry of their form, still tower in solemn grandeur over the surrounding forests, and proclaim to the yet distant traveller the locality of the sacred city. Seven or eight *dágabas* of various sizes are scattered round the station: these with carved step-stones, and altars, pillars, capitals, and images of Hindú deities, with long stretches of low mounds and walls, form the chief antiquities to be found at the station, and attract notice, rather from their vast number and extent, than from any other quality they possess. They are interesting as marking the period when Sinhalese genius and enterprize reached their zenith; and to the eye of the engineer, the accuracy of the work is a matter of just admiration.

The *Mahá Lohapásáda*, will much disappoint the visitor. It consists simply of a solid square of roughly squared slender pillars, 40 in each row, and rising about 9 feet above the general surface. Each side of the square is 221 feet. There can be little doubt that these pillars were the mere foundations of a huge pyramidal wooden structure, nine stories in height, which must somewhat have resembled the so-called Chinese porcelain towers, and which, when decorated in the Siṇhalese fashion, must have formed a very striking, if not a very beautiful object.

It is impossible for me here to describe the various antiquities round the station. Perhaps a future paper may be devoted to the subject.

Some time ago I commenced a large scale plan of the ground around the station, but want of leisure has forced me to abandon the work.

Mihintalé, eight miles east of Anurádhapura, is much resorted to by pilgrims; for there stands the oldest of the *dágabas*, and there the great teacher Mahindo expired. A fine view, stretching probably from sea to sea, and far up to the Mátalé hills, is obtained from the snmmit.

At Owkonna, about twenty-six miles south of Mihintale, there is a colossal erect statue of Buddha, about 35 feet in height; it is cut out of solid rock, to which it remains partially attached. The right hand is raised as in the act of benediction.

Wijitapura, near Owkonna, has been already mentioned. A siege which it underwent is minutely described in the Mahá-waṇso; but on enquiry, I could not ascertain the existence of any walls or other structures, except a small half-ruined *dágaba*.

Close to the southern extremity of this district, but just within the limits of Seven Kóralés, at Seseruwa-kandé Viháré, there is a statue of Buddha resembling in size and position that at Owkonna.

Both here and at other parts of the district, I have met with and copied numerous inscriptions; but regarding these deem it unnecessary at present to do more than state, that the characters employed are not to be found in any of the alphabets in my possession.

## Fiscal Arrangements.

This district always formed an integral portion of the Kandyan Provinces, being specially entrusted to the third Disáwa for the time being. The last of these appears to have been Talgahagoḍa Disáwa, who seems to have resigned about the year 1833. It was about this time that the district, as it now exists, was formed by adding some portions of Mátalé and Seven Kóralés.

Until a few years ago, the native headmen consisted of Mahá Wanni Unnehes, Wanni Mudiyanses, and Kariyakarannas, all these being connected with both the Revenue and Police Departments. At present we have Divisions, Kóralés and Tulánas, under Raṭémahátmayás, Kóráles, and Lékamas; of the first there are 3, of the second 17, of the third about sixty.

Raṭémahátmayás receive £2 10*s.* per mensem, besides five per cent. on the revenue collected from their divisions.

Kóráles receive five per cent, on their collections, and hold, free of tax, such lands as they possess within their own Kóralés.

The Lékamas, unlike the two other grades, are at present regarded solely as Police Vidánes. As a matter of fact, however, they remain, as formerly, general assistants of the Kórálés; and this arrangement ought, I think, to be again formally sanctioned. They hold, free of tax, such of their lands as lie within their own Tulánas, aud do not receive stated salary, nor percentage.

It is probable that the system of allowing headmen to hold land tax free, will soon be altogether done away with. It has been maintained, probably with the intention of obtaining the services of men personally interested in their own divisions; but this object can be otherwise secured, and a constant source of demoralization cut off. At present, quantities of land, are to

escape tax, entered in the names of headmen, who after the lapse of some years claim, and frequently take possession of the lands themselves. At the same time, I see no objection to employing unpaid headmen, so long as the offices are eagerly sought by the people. The Sinhalese love of honor and distinction, though carried to somewhat unreasonable lengths, is in itself laudable, and gives a *point d'appui* to those who wish to elevate the people. In our own country, many offices unconnected with salary are eagerly contended for, and I see no reason why the same system should not be followed here. That unpaid headmen would take bribes is not more true than that the paid headmen now do so.

The headmen are, on the whole, inferior in activity and intelligence to those of adjoining districts. This may be attributed to the fact, that the people were, until lately, almost debarred from intercourse with others ; that the district was formed of fragments taken from others, and which are only beginning to amalgamate into one homogeneous whole ; that the resident civilians have been frequently changed ; that the establishment is necessarily broken up annually ; and that formerly the Wanniya caste had a sort of monopoly of the headmenships ; and even now, many of these people, while they think that they have a right to be made Kórálás and Raṭémahátmeyás as opportunities occur, yet totally neglect their own education, on the plea that they can pay others to read and write for them. I think that a bad effect has been produced by the unceremonious way in which headmen are appointed and dismissed ; and believe, that Government in giving up all sorts of state and ceremony, is gratuitously throwing away a powerful means of influencing the people.

Whether headmen ought, or ought not, to have more power than at present, is a matter for serious enquiry, but need not be entered upon here.

## Revenue.

With some trifling exceptions, the sole source of revenue is the tax on grain.

Formerly this used in part to be paid in kind (*ámanai*), but this gave rise to so much deception and loss, that the plan has long since been abandoned. At present the great majority of the tax is collected by the commutation system. According to this, the average annual produce of each piece of land being estimated, the cultivator redeems that portion of it which would fall to Government. It is to be observed, that the rate of redemption is fixed very low, it being considered that the loss thus occurring is more than counterbalanced by the ease of collection, the fixity of revenue, and the checking of deception. In this opinion I entirely concur, and believe the commutation system to be eminently advantageous, both to the rulers and the ruled. The whole process is as follows :—

The headmen send in lists of the lands, giving the extent and probable produce of each share ; these lists then may be compared with those of former years, so as to expose any fraud, and are then entered in large register-books ; additional columns, shewing the tithe, in grain and in money, being added. There is then drawn out a set of tickets, forming in fact, a copy of the register ; each ticket containing a memorandum as to the amount due on each share. After this is prepared, the Assistant Agent proceeds to some appointed village ; the people assemble ; those of a certain village are called forward ; the first name is read, the peasant comes forward, signs the register, and receives the memorandum shewing what he has to pay, and as the matter proceeds, complaints as to over-estimation, &c., are frequently heard at once, and the requisite alterations made. After all this is done, another set of receipts, corresponding to the entries in the registers, is filled up ; each such receipt is given by the headman to the person whose name is inscribed on it, when he pays the tax due by him. In this way the peasant knows beforehand what he has to give annually, and he cannot be called on by the Kóráḷá to pay twice over, as used formerly to occur not unfrequently. The headmen, when they bring revenue to the Kachchéri, give in lists of those from whom they have received it, and thus, if a headman dies or is dismissed, there is no difficulty in discovering who is and who is not in arrear.

These commutation settlements are made for periods of five years. It was at one time proposed that they should run for twenty years, but fortunately this scheme was abandoned, as also that of allowing the people to redeem their whole grain tax at ten or twenty years' purchase.

The taxes from chénas, *tawalas*, and lands which are cultivated at uncertain periods, are collected by estimation, that is, the growing crop is estimated, and the villager redeems the tythe at a fixed rate, which is somewhat below the market value of the grain; at present it is 8*d*. pence per parra, the market value being from 9*d*. to a 1*s*. It is desirable to check this system so far as circumstances allow, as it is impossible to prevent deception being carried on to a great extent.

The execrable system of farming taxes has never been in use here, and except under very peculiar circumstances I should deplore its introduction.

Fine grains pay no tax, this being a Kandyan district; and really, when a man is reduced to living on *kurakkan* "roṭies", it would be cruelty to tax him. The only thing that might induce one to lay a tax on these grains would be, the hope of forcing the people to the cultivation of wholesome articles of diet.

It appears that in 1825 the revenue realized from this district amounted to the handsome sum of eleven pounds, thirteen shillings and five pence half penny; and from that time until 1883, it seems to have averaged only £129 13*s*. 5*d*.; after this period, however, rose steadily and rapidly, and now nearly, if not quite, covers the expenses.

Last year, (1852) the grain revenue amounted to £1735 4*s*. 5¼*d*. and the whole real revenue, exclusive of road tax, to £1874 16*s*. 5¼*d*. This year these items amount to £1021 1*s*. 5*d*., and £927 4*s*. 4¾*d* respectively.

Two causes will account for this decrease:—

1. Within the two previous years almost all arrears had been collected.

II. Last year murrain prevailed to a lamentable extent, and so many of the draught cattle died, that large quantities of land were left uncultivated; and as the people are naturally improvident, they were at once reduced to great distress. On the other hand, the amount due for grain commutation by the settlement just closed, contrasts favorably with that which preceded it, shewing an increase of £74 8*s.* 0½*d.* A slight examination will leave no doubt that this district is rapidly increasing in wealth and importance.

## Crime.

The people of Nuwarakaláwiya are the most gentle I have had the fortune to meet. It is true they quarrel a good deal, but these squabbles are generally of the most trifling kind; the parties after exhausting their list of abusive terms, pull each other's hairs, then shriek and run away from each other, and so the matter ceases. Serious assaults, robberies, murders, are all but unknown, and during three years I have not had to punish one native of the district for pilfering.

Cattle stealing used to prevail to a great extent, but has been much checked since the matter was placed in the hands of the District Judges. It is still carried on to some extent on the borders of Seven Kóralés and, latterly, of Maṇṇár, but three-fourths of the charges now investigated prove utterly false.

The people are fond of litigation, but not I believe to the same extravagant extent as elsewhere, and numerous disputes are settled by reference to the Assistant Agent without going to the Courts of law at all; and some such system as this seems to be infinitely the best adapted to the people.

## Future Prospects.

The soil on the major part of the district being good, there can be no doubt that agriculture will receive more and more attention. Roads are being formed in every direction, and if Government took up the matter of Tank repair with spirit, I believe that Nuwarakaláwiya would profit thereby fully as much as any district in Ceylon.

5 FEB 1887
BRITISH MUSEUM NATURAL HISTORY

## NOTICE.

The price of the Journals of the Royal Asiatic Society (Ceylon Branch) is, in Ceylon—to Members, Rs. 1 each ; to Non-Members, Rs. 2 each.

Journals are obtainable from :—

(1) The Honorary Secretary R.A.S. (C.B.), Colombo.

(2) Messrs. Trübner & Co., 57 & 59, Ludgate Hill, London, E. C.

# JOURNAL

OF THE

# CEYLON BRANCH

OF THE

# ROYAL ASIATIC SOCIETY,

# 1858-59.

## VOLUME III.

BRITISH MUSEUM NATURAL HISTORY

## No. 11.

*EDITED BY THE HONORARY SECRETARY.*

"THE DESIGN OF THE SOCIETY IS TO INSTITUTE AND PROMOTE ENQUIRIES INTO THE HISTORY, RELIGION, LITERATURE, ARTS, AND SOCIAL CONDITION OF THE PRESENT AND FORMER INHABITANTS OF THE ISLAND, WITH ITS GEOLOGY, MINEROLOGY, ITS CLIMATE AND METEOROLOGY, ITS BOTANY AND ZOOLOGY."

COLOMBO:
PRINTED AT THE "CEYLON OBSERVER" PRESS.

1893.

# JOURNAL

OF THE

# CEYLON BRANCH

OF THE

# ROYAL ASIATIC SOCIETY,

## 1858-59.

---

## VOLUME III.

---

No. 11.

---

*EDITED BY THE HONORARY SECRETARY.*

---

"THE DESIGN OF THE SOCIETY IS TO INSTITUTE AND PROMOTE ENQUIRIES INTO THE HISTORY, RELIGION, LITERATURE, ARTS, AND SOCIAL CONDITION OF THE PRESENT AND FORMER INHABITANTS OF THE ISLAND, WITH ITS GEOLOGY, MINEROLOGY, ITS CLIMATE AND METEOROLOGY, ITS BOTANY AND ZOOLOGY."

---

COLOMBO:
PRINTED AT THE "CEYLON OBSERVER" PRESS.

1893.

# CONTENTS.


| | PAGE. |
|---|---|
| The Laws of the Buddhist Priesthood.—By the Rev. D. J. GOGERLY ... ... ... | 253 |
| Notes on the Mythological Legends of the Sinhalese.—By J. DE ALWIS, Esq., Assistant Secretary ... | 262 |
| A Statistical Enquiry into the state of Crime in Ceylon.—BY J. CAPPER, Esq., Honorary Secretary | 293 |
| Sinhalese Rhetoric.—By J. DE ALWIS, Esq., Assistant Secretary ... ... ... ... | 308 |
| Scripture Botany of Ceylon.—By W. FERGUSON, Esq. | 316 |
| Remarks on the supposed identity between Nágárjuna and Nágaséna.—By J. DE ALWIS, Esq., Assistant Secretary ... ... ... ... | 346 |
| Expenditure on Public Works in Ceylon.—By J. CAPPER, Esq., Honorary Secretary . ... | 354 |
| APPENDIX :—Proceedings of Meetings ... ... | i |
| Society's Circular.. ... ... .. | xii |
| Correspondence concerning the Mauritius Exhibition | xiv |
| Correspondence with the Society of Arts ... | xv |


## *ERRATA.*

Pages 1—24 should have been numbered 253—276.

# ROYAL ASIATIC SOCIETY, CEYLON BRANCH.

## THE LAWS OF THE BUDDHIST PRIESTHOOD.

By the Rev. D. J. Gogerly.

In the Papers laid before the Society respecting the laws relative to the Ordination of Buddhist priests, the different precepts are literally translated in the order in which they are recorded in the *Mahá Vaggo*. But this mode, although exact, is tedious, and therefore will be abandoned in this, and the following Papers. The substance of the precepts will be given, with such observations as may tend to elucidate them.

It has been previously noted, that Buddha declined the formation of a code of laws for the government of the priestly order when he was requested to do so by Sáriputra, one of his chief priests; stating, that it would be more advisable to legislate as circumstances should arise requiring directions to be given. The precepts thus given were afterwards arranged under separate heads. The *Párájika* and *Pachittiyaṉ* divisions contain the Moral precepts, binding upon every member of the order. The *Mahá Vaggo* and *Chúla Vaggo*, contain the Ecclesiastical laws, and the *Pariwára Páṭho* is a technical recapitulation and explanation of the other four sections of the *Vinaya Piṭaka*.

The second chapter of the *Mahá Vaggo*, explains how the *Póya*, or *Upósatha* days were instituted, and gives the rules of their observance. The *Póya* days are, up to the present time, observed by all Buddhists, who on

the changes of the moon attend their temples, make offerings, hear the discourses of Buddha read, or his precepts explained, and devote a portion of the day to meditation, and other religious observances. But the days of the New and of the Full Moon are regarded by the priests as days of peculiar solemnity, each priest being required to be present at a general assembly of the order, at an appointed place within the district, in which he resides, that his moral conduct may be investigated: and if he have been guilty of any irregularity, he must confess it, and submit to ecclesiastical discipline.

The institution of the *Upósatha* resulted from the recommendation of Seniya Bimbisára, the king of Magadha. He observed that the teachers of the *Paribbájaka* sect were accustomed, on the days of the changes of the moon, to assemble their followers and preach to them, in consequence of which they became very popular.

He waited on Buddha, stated the fact, and requested him to direct his priests to adopt a similar course of proceeding. To this Buddha assented, and calling an assembly of his priests directed them to meet on the days of the New and Full Moon, and on each intervening eighth day. They accordingly met on the days now known as the day of New Moon, the eighth day, the fifteenth day, and the eighth day after the fifteenth day.

At first they remained quite silent when assembled, as they had received no directions how they were to conduct themselves. When it was reported to Buddha, that the people were much dissatisfied with these silent meetings, he directed that on each day of assembling, they should preach to the people, and explain the doctrines of their religion. It also occurred to him, that it would be advantageous if, on the New Moon, and on the fifteenth day of the month, the priests, in addition to their public preaching, should hold a private meeting in which the Moral precepts, called the *Pátimokkha*, should be recited,

and the obedience or disobedience of each priest be ascertained, that thus the purity of the priesthood might be secured. For this purpose, he directed that certain boundaries should be determined on by the *Sañgha*, (or assembly of the priests,) and that all the priests living within that boundary should meet together on the days appointed.

The boundaries are in no case to include a district more than three yoduns (about 40 miles) in extent; and they are not to be intersected by a river, unless there be a bridge or ferry boat, by which the priests may pass without danger: neither shall one large boundary include smaller boundaries, but each district must be distinct from every other. If a priest reside in a jungle, the boundary shall include the space of 300 feet around his hut. If priests be in a vessel, or on a bank, or rock, within a river or lake, so far as a man can throw water, is to be accounted a boundary.

There may be many residences for priests within a district, but the *Upósatha* services are to be conducted in one place only, which place has been previously consecrated. This *Upósatha* hall is to be in general near to the residence of the senior priest of the district. All the priests who are in the district at the time appointed for the meeting, shall assemble in this place: if the number be such that they cannot be accommodated in this one room, a porch, or a verandah, may be added to it; and after it has been consecrated the whole building will be one *Upósatha* hall. Notice of the time of meeting shall be given by the senior priest. No layman is to take any part in the proceedings.

Priests are not allowed, except in their own residences, to be without their three robes; but as at times in coming to the *Upósatha*, their upper garments may become wet, permission is given to lay aside one of them, if necessary, during the service.

The *Upósatha* service consists of five parts:—

1. The opening service.

2. The recital of the laws concerning *Párájika* (leading to expulsion).

3 The recital of the laws concerning *Sańghádisesa*, (leading to suspension).

4. The *Aniyata dhamma*, or doubtful cases.

5. The minor offences in detail.

In general, the whole is to be recited, and the necessary enquiries to be made: but in case of danger from armies, thieves, demons, or other injurious things, the service may be shortened. The service is to be conducted by the senior priest, or by some competent person nominated by him in the General Meeting, who is not to be impeded in the performance of his duties by any of those present, upon pain of ecclesiastical censure. The precepts are to be recited in a clear and audible voice. If any priest have a charge to make against another, he is previously to intimate his intention to the person against whom the charge is to be brought: if this notice has not been given, the accusation is not to be heard. No groundless charge is to be made, under pain of censure; and if an unjust sentence has been passed by the *Sańgha* against any person, it may be put aside if four or five members are of opinion that it should be disallowed: if only two or three members dissent, they may enter their protest: if only one, he may say, "I do not agree," and thus record his dissent.

The senior priest is to command a junior to sweep the *Upósatha* hall, to arrange the seats, and, when necessary, to light the lamps. If the junior refuse, he is to be placed under censure.

No priest within the district is allowed to be absent without a sufficient reason being stated: if he be detained from the service by sickness, he is to make to another priest a declaration of his own purity, and of his assent to the meeting being held, (that is, that he is not acquainted with any reason why it should not be held): otherwise he

is to be brought on his couch to the place of meeting. If he be placed under restraint by enemies, so as to be unable to attend, the *Sańgha* is to depute a member to see him, and to receive his declaration of personal purity, and of his assent to the meeting being held.

The senior priests must be present before the *Upósatha* service is commenced.

If from any cause, a minority of the priests in the district commence the service, and afterwards a number larger than those present at the commencement should come in, the service is to be re-commenced : but if the members, who come last, be only equal to those who commenced the service, or fewer, the service is not to be re-commenced, but only the declaration of personal purity to be received from those who came last.

It is necessary that five priests should be present to constitute a *Sańgha* for ordinary purposes ; but if only four be present, the *Upósatha* service may be attended to : if there be only two or three persons, they may state their own personal purity.

If any one has been guilty of a fault, he must go to a pure priest, and having removed his robe from one shoulder, kneel down before him, and with uplifted hands confess his fault : if he profess himself to be sorry for what he has done, and state his determination not to repeat the offence, he may be absolved. But this applies only to minor transgressions : absolution from the crimes called *Sańghádisesa*, can only be granted by the *Sańgha*.

The *Pátimokkha*, which is directed to be recited at every bi-monthly *Upósatha* meeting, contains the whole of the precepts recorded in the *Párájika* and *Pachiti* divisions of the *Vinaya Piṭaka*, but without the reasons for their enactment, or the adjudged cases recorded in illustration of the law. The priests being assembled in the *Upósatha* hall,

the officiating priest commences the service, by enquiring if the room has been swept, the seats arranged, and water provided for drinking. He then proceeds to enquire, if there be any objection to the meeting being held, and whether it be the proper time for the recital of the *Pátimokkha.*

After these preliminaries, he states, that with the permission of the *Sańgha*, he will conduct the service, and that after each section of the *Pátimokkha* has been read, the question will be put thrice, "Are all the members present free from the breach of any one of these precepts?" If any one be guilty, he is to confess it: if he be free from guilt, he is to remain silent. They are reminded that this is an appeal to each person, and that to remain silent when they know themselves to be guilty, is a great crime. He then recites the four precepts contained in the *Párájika* section.

*The Párájika Section.*

[The penalty attached to a breach of any one of these four precepts is permanent expulsion from the body.]

I.—A priest not having confessed his inability to obey the rules binding on the priesthood, and thus withdrawing himself from the community, who shall have carnal intercourse with any being, human, animal, or super-human, is *Párájiko*, and is expelled.

II.—Any priest, who, with a dishonest intention, shall appropriate to himself any property, (to the amount of one rupee or more,) which has not been given to him, is *Párájiko*, and is expelled.

III.—A priest who is guilty of taking away human life, or is in any way accessary to that act, either by word or deed, is *Párájiko*, and is expelled.

IV.—A priest who shall falsely assume a high spiritual character, and the super-human power connected with that character, is *Párájiko*, and is expelled.

*The Sańghádisesa Section.*

I.—He who wilfully pollutes himself, is guilty of *Sańghádiseso.*

II.—A priest, who, with an impure intention, comes in personal contact with a woman, either by taking her hand, touching her head, or by touching any other part of her body, is guilty of *Sańghádiseso.*

III.—A priest, who, with a corrupt mind, holds libidinous discourse with a woman, is guilty of *Sańghádiseso.*

IV.—A priest who endeavors to excite a woman to have criminal conversation with himself, is guilty of *Sańghádiseso.*

V.—A priest who carries messages between the sexes, whether to promote marriage or concubinage, is guilty of *Sańghádiseso.*

VI.—A priest who procures a residence to be built for himself, must not have the house larger than 12 cubits of Buddha's measure in length, and 7 cubits in breadth; he must have it consecrated by priests, must choose a place free from danger, and surrounded by an open path. He who neglects any of these things is guilty of *Sańghádiseso.*

VII.—A priest who procures a Vihára to be erected for his own residence, in conjunction with other priests, must assemble priests to consecrate the site, choose a place free from danger, and surrounded by an open path: otherwise he is guilty of *Sańghádiseso.*

VIII.—A priest, who, with an evil intention, brings a groundless charge against another priest for the purpose, of having him expelled from the priesthood, is guilty of *Sańghádiseso.*

IX.—A priest who shall avail himself of some circumstance foreign to the charge, to substantiate that which would lead to the expulsion of another priest, is guilty of *Sańghádiseso.*

[This is thus illustrated: A priest violently hated two eminent members of the body, a male and a female, and brought a charge against them of incontinence. To substantiate this charge he procured two goats; to the male he gave the name of the priest to be accused, and to the female that of the priestess. Having seen the animals copulate, he stated that he had witnessed the act of criminal conversation between M. and N., giving the names of the priest and priestess.]

X.—He who endeavors to stir up strife or promote schism among the priests, shall be thrice exhorted to abandon his efforts. If he listen to the exhortations, it will be well; but if he disregard them, he is guilty of *Sańghádiseso.*

XI.—If two or three priests shall become partisans of any other priest, and agree to affirm the correctness of whatever he may do or say, stating, "He speaks and acts in accordance with our views: his declarations are consistent with truth and discipline, and we perfectly agree with him"; they shall be thrice warned to abstain from such partisanship; but if they persist in their course of proceeding, they are guilty of *Sańghádiseso.*

XII.—If any priest be an evil speaker, and when he is reproved for any act contrary to the precepts, shall improperly say "Hold no coversation with me either for good or bad: keep your observations to yourself and do not interfere with my concerns; I also will abstain from making remarks on your proceedings"; and shall thus impede the harmony of the community; he shall be thrice exhorted not to continue in this state. If he submit to this counsel, it will be well: if not, he is guilty of *Sańghádiseso.*

XIII.—If any priest residing in the neighbourhood of a town or village, shall be a corrupter of public morals by his own improper practices: and if this conduct is seen or heard of by other priests, they shall state the facts to him and advise him to leave that neighbourhood.

Should he reply, you are self-opiniated and partial in your judgments, endeavoring to terrify priests with your threats: they must reply, Speak not thus, your improper conduct is generally known; it is advisable that you should leave this place. Thrice they are thus to admonish him; if he obey the admonition it will be well; if not, he is guilty of *Sańghádiseso.*

When any one is guilty of any of these crimes he is to be suspended, and placed under the supervision of the other priests for as many days as he concealed the crime, and for six days additional. When he is sufficiently humbled he may be restored to his former position as a priest, but this can only be done by a Sańgha of twenty members.

End of the thirteen *Sańghádisesa.*

(*To be continued.*)

# NOTES ON THE MYTHOLOGICAL LEGENDS OF THE SIṈHALESE.

By James de Alwis, Esq., Assistant Secretary.

There is no reasonable doubt entertained at the present day, as to the belief that Asia was " the country in which the worship of the deity became first corrupted by human inventions, and finally degenerated into a system of idolatry, where the adoration of the creature was substituted for that of the Creator."* There is abundant testimony to prove that both Greece and Rome obtained their religious worship from Asia.

From the position which Ceylon occupies in a geographical point of view, it can hardly be doubted, that the systems of Mythology known to the Hindús, found an early and easy passport to Ceylon. However much the Indian system is opposed to the tenets of Buddhism,† the religion of Laṅká ; the Siṇhalese poets have never, it seems, scrupled to adopt that which was used by their Hindu neighbours. ‡

* Tooke's Pantheon, Introduction, p. 9.

† *Ramayana Barata—etuḷuvadeḍummulyuta—kimutbasnirata, &c.* See note in my Sidath-Sangarawa, pp. xi, xii.

‡ It is in accordance with such a feeling, that thoughtless native Protestants consider it not improper to take part in Buddhistical ceremonies, or that Buddhists themselves, under various circumstances, shew an attachment to the forms of Christian worship, believing it by no means inconsistent with their own faith, which inculcates all the virtues which ennoble the soul, besides reverence to parents, charity to the poor, humanity to animals, and love towards all mankind. The case, however, with Siṇhalese Roman Catholics is different; and the difference is owing to the rigid requirements and ecclesiastical discipline of that Church. And it is a remarkable fact, that amongst the Siṇhalese *Roman Catholics* there is no wavering of mind, no partnership faith (if I may so call it), and no hankering after the religion of their forefathers.

In the creed of the Buddhist some of the Hindú deities are, however, not regarded as the others are—'mere creatures of fancy,' 'the metaphors of poetry,' and 'the personifications of nature.' Some are recognized in Buddhism as really existing beings, and to them the Buddhist makes offerings.* Of these we shall treat in due order.

The object of this Essay is a brief inquiry into the Siṇhalese Mythology, as it may be gathered from our poets; and in that investigation it will be our endeavour slightly to compare the systems known to the East and West.

There are two sources from whence the Siṇhalese have obtained their Mythology:—1st, Their Religion or their *bana*, the Buddhist scriptures; and 2nd, Tradition, or that which is found in the works of Hindú writers.

Under the first head may be mentioned, not only the fabulous *déviyo* recognized in Buddhism, and to whom homage is paid by the votaries of Gautama; but also the fabulous system of the universe, and its gods and *nágas*: and under the second head are comprehended the metaphors and allegories of poets, the personification of abstract notions, or symbolic representations of the powers or attributes of nature, the planetary system, and its influence on man.

Innumerable are the worlds of the Universe. Each system or *Sakwala*, scattered throughout the infinity of space, has its own sun, moon, and stars. The earth with its visible sun and moon, and its heavens and hells, constitute the *Magulsakwala*, which is surrounded by a rock called the *Sakwalagala*. The earth has in its centre the *Mahamera*, around which are oceans, mountains, continents, lakes, islands, &c. The earth is 240,000 yojuns, or 3,840,000 miles, in solidity.

---

* But some of them are not objects worthy of adoration. The "Pújávaliya" compares the folly of those who 'listen to the teachings of Siva or Vishnu,' to the Brahman in the legend [see Hardy on Buddhism, p. 472.] who was deceived by the Jackal. "They will be deceived likewise, and the object at which they aim will not be attained."

It rests on *Jala-poḷowa** or the world of waters, 7,680,000 miles in depth; and this is supported on *Wá-poḷowa*, or world of air, 15,360 miles deep; and this again rests in a vacuum called *Ajatákáṣa*.

"Thales," says a late writer, "entertained the idea, that the earth floated on the ocean, whilst Democretes taught that it rested on the air like a bird with its wings outspread." The Buddhist doctrine is in accordance with these opinions. When Milindu, king of Ságal, said to Nágaséna, that he could not believe that the earth was supported by the world of water, and this by a world of air, the priest took a syringe and pointed out to him, that the water within the instrument was prevented from coming out by the exterior air; by which the king was convinced that the water under the earth might be supported by the *Ajatákáṣa*.† Professor Wilson, in his *Vishṇu Purána*, says, "The supreme being placed the earth on the summit of the ocean, where it floats like a mighty vessel, and from its expansive surface does not sink beneath the water."

One of our poets, in extolling the praises of Buddha to the skies, says, that "the beams of his rays dived through *Wá-poḷowa*, and thence proceeded to the end of the immensity of space, *Bawaga*,—and thence spread themselves throughout the whole *Sakwala* or universe:"

වාපොලවෙහි කිමි ද     මුළු සක්වලැ විහි ද
ගැවසී ගොසින් බවග ද     දිවෙව් රැළිදී මුනිඳු රැස්ක ද

*Káviyásékhara.*

* According to some of the Hindú legends, the earth rests upon the back of a tortoise. Thus, in the play entitled *Maláti and Madhava*:—

'Thy foot descending spurns the earthly globe,
Beneath the weight the broad-backed tortoise reels.'
*Hindú Plays*, ii. p. 58

According to another passage in the *Mudra Raksha*, the earth is supposed to rest on the heads of *Sêsha*, a snake of innumerable heads.

'A weary burden is the cumbrous earth
On *Sêsha's* head, but still he bears the load.'—ib. p. 185.

† One of the causes of an earthquake, according to Buddha; see Bengal A. S. Journal, vii. p. 1,001.

That which first demands our attention, as the theme of every poet, the personification of strength, firmness, and greatness, is the *Maha-mera* or Mount Meru,* the Olympus of the Greeks.

තර සර සුමෙර තද තෙද දිමුතු දිවසුර—*Selalihini Sandésa.*

The *Vishṇu Puráṇa* and the Buddhist scriptures place it in the centre of Jambudwípa. It is represented like the Olympus, to reach the skies, and so high, that a stone, if let fall from its summit, would not reach the earth in four and a half months.

> " A brazen anvil falling from the sky,
> Through thrice three days would toss in airy whirl,
> Nor touch the earth till the tenth sun arose."
>
> *Elton's "Hesiod, Theog,"* 893.

Like, too, the Olympus on which the Gods were assembled by Zeus, Mount Meru is the resorting place of the gods, the abode of *Ṣakra*, or the Indra of the Hindús.

මෙරමුදුනෙහි සිව්-සුරිඳු පඬුපුල් අස්න උණුවි—*Guttila-kávya.*

*Maha-mera* is of various colours: on the east, it is like silver; on the north-east virgin gold; on the south sapphire; on the south-east azure blue; on the west coral; on the south-west blue; on the north gold, and on the north-west bright gold. These colours are imparted to the adjacent rocks and oceans. Hence, the "Milk-white-ocean," or *Kiri-muhuda*, which we shall hereafter notice under the second head.

This great mountain is alternately surrounded by seven oceans and rocks,† and probably it is these seven rocks

---

* "I had almost forgotten that *Meros* is said by the Greek to have been a mountain of India, on which their Dionysos was born, and that *Meru*, though it generally means the north pole of the Indian Geography, is also a mountain under the city of Naishada or Nysa, called by the Grecian Geographers *Deonysipole*, and universally celebrated in the Sanscrit poems."—*Sir William Jones's Works, vol.* i. p. 264.

† "According to the geography of the Puránas," says Professor H. H. Wilson, in his Hindú Plays, ii. p. 58. "the earth consists of a series of central circles and six other annular continents separated from each other by as many oceans of different fluid substances."

which the Bráhmans regard as the seven insular continents, which are severally surrounded by oceans. It is said, that Priywritta drove his carriage seven times round the earth, and the seven seas are the seven ruts left by its wheels. The poet in alluding to the seven rocks, which are *Yugandhara*, *Ísadhara*, *Karawíka*, *Sudarṣana*, *Némindhara*, *Winataka*, and *Aṣwakarṇa*, says :—

පෙර සුර පුරට පව්රෙව්මෙරවටාසි වී
සමුදුර තරඟ සෙමෙරටලූ කිරණිමි වී
යුගඳරපටන් අඩකින් එකිනෙකටමි වී
මනහර රුවන් සත්කුළපව් වලළු වී

*Guttila.*

The four continents are *Uturukuru-divayina*, *Purva-videhaya*, *Aparagóyána*, and *Jambudwípa*, of which the last is on the south of Meru, and has 500 islands. The first, on the north of the great Meru, is the happiest of the four. It is celebrated for the tree *Kap-tura*, which, like the horn of Amaltheia, given by Zeus to the daughter of Melissius, conferred whatever was desired by its possessors. The *Kap-tura* is, in its properties, the same as *Sura-tura*, 'the heavenly tree,' which gives whatever is desired by the gods. We may here, by the way, refer to the *Situmiṇi* gem, and the *Súrabi* cow, the personifications of abundance and charity. The poet, in reference to these three, says :—

සුරතුර නම් ගසෙකි සිතුරුවන නම් පහනෙ කි
සුරබිසඳුනු දෙනෙකි, මොහුටතිලිතෙන් කරවළුවමෙකි

On the north of *Jambudwípa* is the *Himála-wana*, a great forest, in which are situated some of the mountains, famous in Hindú and Siṇhalese poetry, and which are represented as the abodes of gods and devils. *Himála-wana* is also famous for its lakes, among which is the *Anótatta vila*, and 500 rivers: one of these, which, after taking a circuitous course, ascends into the sky, is called the *Ahas-gaňga*, 'the Ganges of heaven,' supposed to trickle through

the tresses of Síva.* The following couplet of the poet, in allusion to this 'heavenly river,' is well known :—

සුරගඟ තරඟරඟ අමාවැසිවසිනාරඟ.

*Kaviyasékhara.*

There are several other minute particulars connected with the foregoing account of the Universe ; but as they can be easily learnt on reference to the books on the subject, we now turn our attention to

1. ṢAKRA or Jupiter, the personification of the firmament.

'Aspice hoc sublime candens, quem invocant omnies Jovem.'

He is called by various names ; *Ṣakra* is his most usual designation in the Siṇhalese, whilst *Indra* is that commonly used by the Hindús. He is the ruler of the highest heaven,

........ ......the great father of the gods above.

*Virgil.*

Hence he is called *Sura-rada* or *Sura-isura* in Siṇhalese : he is the patron of "100 sacrificial offerings," and is thence called *Siya-hutan :* he has a diamond weapon in his hand called *viduru* or *vajra*† *:* he,

..................whose awful hand
Disperses thunder on the seas and land,
Dispensing all with absolute command.

*Virgil.*

is therefore named *Vidu-rata*, or *Vidu-ravi.* He is called *Purańdara*, from the fact related of him, that he divided his city with king *Mahá Mandathu* after the expulsion of the Asurás, who may be compared to the Titans and giants of the

---

* "May the tresses interwoven with a circular garland of serpents for flowers, where the waters of the *Mandakini* are flowing over the lower chaplet of skulls worn in the crest &c."—*Hindú Plays*, ii. p. 9.

† "The diamond and thunderbolt according to Hindú notions, are of one substance and are called by the same appellation, *Vajra*, as the fall of the thunderbolt is usually followed by rain, and may thus be considered as its cause. The propinquity and the mutual friction of the same substance upon the wrists of our young ladies, is in like manner supposed to occasion the dispersion of the fluid treasures of the cloud."—*Wilson's Mégha Dúta, note, p.* 73. I may state it as a fact that the native Siṇhalese of the fifth century, regarded diamond as a non-conductor of lightning It is so stated, in unmistakeable language, in the "Maháwaṇsa" and the Tika.

Greeks, as they were much larger than any order of beings, and made war with the gods.* He has a wife named *Maḍora* or *Sudá*—

සුදානම් සුරලඳද එලඳු.—*Guttila.*

and is thence designated *Maḍorapiya.* He is *Sak* or *Ṣakra*, from his—"power divine in all things known." He is the *Indra* or *Ĭnduradikpati*, the regent of the East, whence he appears in the character of Jupiter Tonens. He is represented as having a thousand eyes; and he

Whose all conscious eyes the world behold.—*Homer.*

is thence called *Sahaseṣ.* One of the versified works on synonyms, has the following lines embodying all the names above given :—

සුරරද සියහුතන් විදුරතද පුරද ර
විදුරවි මඬොරපිය සක් ඉඳු සුරඉසු ර
සහසැස් මෙනම් වේ දික්පතිහට ඉඳු ර

*Námawaliya.*

Thus, in the words of Sir William Jones,† "This Jupiter or Deispeter, is the Indian God of the visible heavens, called *Indra* or the king, and Divespeter, or Lord of the sky, who has also the character of the Roman Genius, or chief of the good spirits, but most of his epithets in Sanscrit are the same with those of the Eonian Jove." He had three principal consorts, one of whom is the *Sudá*, to whom we have already referred. The others are *Sudammá* and *Nandá*, of whom one of our bards sings :—

සුරලඳ සුදම්මා දිලිහි දිලිහි සුරඹනන්දා.—*Guttila.*

One of Indra's courtesans, *Rambá*, Sir William Jones identifies with "the popular Venus, the goddess of beauty that was produced, according to the Indian fabulists, from the froth of the churned ocean."

Indra's celestial city is called *Amarávati;* his palace,

* It is generally agreed, that the Giants were personifications of the elements, and that their wars with the gods refer to the throes of the world in its state of chaos.—*Hardy, p.* 47.

† See his works p. 248.

*Vijayót** ; his park, *Nandana*† ; his chief elephant, *Airávana*‡ ; his bow,§ "the rain-bow," and his charioteer, *Mátali*, who is made to say by one of our poets—" Asurás are my foes, Ṣakra is my lord : know thou that I am Mátali, the charioteer" :—

රිපුය අසුරානම් : මයිමිය පුරඳරාන ම් :
දනුව ඉඳුරානම් : මමය මාතලිරියැදුරාන ම් :

Although he is the Regent of the East ; yet his Olympus is the *Maha Mera*.

High heav'n the footstool for his feet he makes,
And, wide beneath him, all Olympus shakes.—*Homer*.

A Siṇhalese poet briefly sums up Indra's attributes in the following lines, wherein he is made to say ; " a possessor of a thousand eyes, the chief of (both the worlds) heaven and earth, the Regent of the East, I am called by men Ṣakra, the supreme God."

දහසක් දිවැස් ඇති, දෙ දෙව්ලොවටම අදිපති
මට ඉඳුරැදික්පති, දනෝසක් දෙවිඳුයයි පවසති :
*Guttila*.

I shall briefly allude here to the character which this Déva holds in Buddhistical works. There he has few of the attributes which are described in the *Puránas*, and is represented rather as a venerable personage, the friend of the faithful ministering to their wants and comforts, than as receiving their homage, or as the object of their prayers. It is said of Ṣakra, that he was a frequent hearer of Buddha's *bana*, that he thereby obtained merit, and prolonged his own existence. He is however characterized in several books, as being exceedingly jealous of pious men, lest they may, after migrating from their present existence, supersede him in his kingly

---

* සුරරද පායවන් විජයොත්නම් මහරු.—*Sẹlalihini Sandésa.*

† පිවිස එනඳුන් නඳුන් වනයට—*Guttila.*

‡ සොබමන් එරවනනැගෙමින් සුරසෙන් පිරිවරා නොමිනා.—*Kusa Játaka*

§ " In Indra's bow, o'er yonder hillock play."—*Mégha Dúṭa.*

office.* Thus, according to Hindú writers, when he saw that Nara and Náráyana had devoted themselves to ascetic exercises, he was greatly alarmed, and sent *Káma* 'love,' and *Vasanta* 'spring,' with the nymphs of heaven, to inflame the sages with passion, and thus end their penance. He however failed in his attempts; for Náráyana, inviting the tempters with much civility, created out of a flower-stalk placed on his thigh, a nymph, the superiority of whose charms covered the *Apsarasas* of heaven with shame, and induced them to return to Indra, with the newly-created goddess as a present.† Numerous instances of this jealousy and treachery towards men, are also related in the Buddhistical annals. In the legend of *Lómasa Kásyapa*, Ṣakra is represented in the character of the devil, tempting the Ṛishi to commit a forbidden sin, from which he was only deterred by the power of a miracle. But, where he apprehended no danger to himself from the superior merits of others, he appears as their guardian, benefactor, and friend. Numerous also are the instances in which he is said to have helped Gautama, (when Bodhisat) out of difficulty and misfortune. Thus, when Gautama was a squirrel, and lost his young ones, Ṣakra caused them to be found; when Vessantara, he prevented the king's being deprived of his "help-mate," and nourished his children on the top of a tree; when Guttila, he taught the minstrel to defeat his ungrateful pupil; when Gautama became Buddha, and overcame Mára, he shouted forth his hallelujahs throughout the universe. In his last moments the "Máhavaṇsa" relates, Buddha placed Laṅká under the protection of Ṣakra: (see "Mahávaṇsa" p. 47;) and when Gautama died, Ṣakra sang a hymn, consoling himself under the reflection, that "All living beings relinquish their existence in this world, and that in like manner the Teacher of the world, the incomparable, the being of felicitious advent and of power, the supreme Buddha also dies!"

* See Pr. Monier William's *Sakuntalá*, p. 7, *notes*.
† Hindú Plays, by Pr. H. H. Wilson.

2. The Deity of Brahmanical faith, the divine cause, and essence of the world, from which all creatures emanate, is Bráhma.* He is represented as being 192 miles high, his feet as 30 miles long, and his robes 256 miles. He is looked upon by the Hindús as the creator of man, a doctrine opposed to the tenets of Buddhism, by which the chief "first cause," that of which even a savage has some conception, is ignored. "The beings who were created by Brahma," says Professor Wilson in his *Vishṇu Purána*, "of the four castes, were at first endowed with righteousness and perfect faith; they abode wherever they pleased, unchecked by any impediment, their hearts were free from guile, they were pure, made free from evil by observance of sound institutes. In their sanctified minds *Hari* dwelt, and they were filled with perfect wisdom, by which they contemplated the glory of Vishṇu."

According to Buddha, Bráhma is a believer in his tenets. He is said to be the Deva who received into his arms the infant Siddharta on his birth, and breathed the consolatory words in the ear of his mother:—"Rejoice, for the son thou hast brought forth will be the support of the world." We will not here pause to consider him as the adorer of Buddha, by whom he stood firmly when attacked by Mára; to whom he made the first offering; and from whom he first heard the *bana*. Suffice it to remark, that the Siṇhalese Poets take him in the light in which he is regarded by the Hindús—the personification of Purity, Sanctity and Wisdom.

පිර්සිදුදෝ අනද, එකලා අනත්නැනබ ද
සීතන රුසිනනුබද, පරම බඹනම් තොමිය ගුනබ ද

"O virtuous Bódhisat! thou art the very Bráhma in purity (and sanctity); in brightness and loveliness; in loneliness of life; in infinite learning, and great wisdom;—the theme of the Rishis."

* In Csoma Körösi's Analysis of the Tibetan annals, the following passage occurs, the genuineness of which is doubted by many Buddhists in Ceylon: "Shakya asks several questions of Brahma, whether was it he who caused the several revolutions in the destruction and regeneration of the world. At last he himself asks Shakya, how the world was made,—by whom? Here are attributed all changes in the world, to the moral works of the animal beings, and it is stated, that in the world all is illusion: there is no reality in the things: all is empty."—*Asiatic Researches*, xx. p. 434.

It is in regard to these attributes, with the arrogance of an Ovid, when he said,

> Jamque opus exigi; quod nec Jovis ira, nec ignis
> Nec poterit ferrum, nec edax abolere vetustas;

the author of the "Kavyasékhara," speaks of himself in the following strain :—

> 'Like a Brahaspati on earth renown'd,
> The limits of each science fully found,
> Radiant with heaven-derived religion's beams,
> On learning's head a living gem he streams.'*

He is represented as holding "an umbrella in hand, and hence his name, *Sat-ata*. He is called *Baram* or *Bamba*, from his acknowledged greatness; *Vidi* from his being the author of destination; *Siwu-wat* from his having four faces; *Ló-ẹjara* from his being the teacher of the world; *Piyum-yon*, from his having been produced out of a lotus; *Ven-put*, from his being the son of Vishnu; *Aṭa-kara*, from his having eight arms; *Sarasawiya-kal*, from being the husband of Saraswati; *Piyum-ásana* from his having a lotus for his seat; *Vé-guru*, from being the teacher of the Vedas; *Ran-gẹba*, from his golden lustre; *Aṭa-net*, from his having eight eyes; *Sura-deṭu* from being the ancestor of the Gods; and *Ló-isuru*, the chief of the world. The above names are collected by one of our poets in the following couplets :

> සතතබරම් විදිසිවුවත්ලෝ ඇජ ර
> තිවට පියුම්යොන්වෙන් පුත්ද අටක ර—
> බඹසර සවියකල් පියුමසනවේගු රෑ
> රන්ගැබඅටනෙත් සුරදෙටුලෝ ඉසු රෑ

We have already seen, that the Asuras were inimical to Sakra, whence they were called *Dew-rupu* or *Sura-saturu*. This is in consequence of their expulsion from *Tawtisa*, one of Indra's heavens, to the foot of *Maha-mera*, where they now reside. Fearful of a repetition of their attacks, the four

---

* See my Sidat Sangaráwa, p. cxci.

† සෙව්හා සිව්වරම්.—*Kávyasékhara.*

guardian Devas or *Hatara-varam-deviyo*,† are appointed to superintend the four quarters of that mountain. The Rev. S. Hardy has the following observations on this head :

" The four guardian dewas, *Dhritaráshṭra*, *Virúḍha*, *Virúpáksha*, and *Waiṣrawaṇa* have palaces on the summit of Yúgandhara rocks. The palace of *Dhritaráshṭra* is on the east. His attendants are the Gandharwas, a *kela laksha* in number, who have white garments, adorned with white ornaments, hold a sword and shield of crystal, and are mounted on white horses. The Déva is arrayed and mounted in a similar manner, and shining like a *kela laksha* of silver lamps, keeps guard over the possessions of Sakra in the eastern division of the Sakwala. The palace of *Virúḍha* is on the south. His attendants are the Kumbhánḍhas, a *kela laksha* in number, who have blue garments, hold a sword and shield of sapphire, and are mounted on blue horses. The Déva is arrayed and mounted in a similar manner, and shining like a *kela laksha* of lamps composed of gems, keeps guard over the southern division of the Sakwala. The palace of *Virúpáksha* is on the west ; his attendants are the Nágas, a *kela laksha* in number, who have red garments, hold a sword and shield of coral, and are mounted on red horses. The Déva is arrayed and mounted in a similar manner, and shining like a *kela laksha* of torches, keeps guard over the western division of the Sakwala. The palace of *Waiṣrawaṇa* is on the north : his attendants are the Yakku, a *kela laksha* in number, who have garments adorned with gold, and are mounted on horses shining like gold. The Déva is arrayed and mounted in a similar manner, and shining like a *kela laksha* of golden lamps, keeps guard over the northern division of the Sakwala."

The *Lókapálas*, who are sometimes confounded with the guardians of the cardinal points, may be here mentioned. They are represented as divinities appointed by Bráhma to act as rulers over different created things. They are amongst others the following :—*Indra*, sovereign guardian of the earth, and the regions below and above the earth ; *Sóma* of

sacrifices ; *Varuṇa*, of the waters ; *Váyu*, of the unembodied element ; *Vaiṣrawaṇa*, of demons and rakshas ; *Parjanya*, of oceans, clouds, rivers ; *Nandi*, of quadrupeds ; *Superna*, of birds of prey ; *Garuṇḍa*, of the winged race, &c., &c. Each city, grove, and house has a presiding deity ; and thus in the "Sẹḷalihini Sandésa," the poet reminds us of the "household god," by adoring whom the *Sarika* was to proceed on his errand :—

නදේසිතින් තමකුල දෙවිය සිහිකොට....ඈ

The city too (Kẹlaṇiya), into which the poet sent his message, is said to be the seat of *Vibhíshaṇa*. It is in accordance with this notion, that the Siṇhalese are very reluctant to pull down an old house ; or even

> ...........an ancient tree, whose branches wear
> The marks of village reverence and care :—
>
> *Mégha Dúta.*

and which is generally supposed to be the abode of dévos This notion of household-gods, is entirely derived from the Hindús, according to whom "every city," says Prof. Wilson, "has its own *Ṣrí*, its own fortune or prosperity, which in former times seems to have been represented by an image with a temple of its own. The practice amongst the ancients of considering a city under the protection of some well-known divinity is more familiar to us, but an analogous superstition with that of the Hindús also prevailed amongst the polytheists of Europe."

Thus in "The Seven against Thebes ;" the Theban women seek their shrines of the gods, who are the guardians of the city. The poet in the "*Málati and Madava*" says ;

> ........... .. . ...........Till they come,
> Obedient to the holy dame's injunctions,
> The matrons of her father's household send,
> The maiden to the temple of the deity
> That guards our walls, to pray that naught molest,
> No evil interrupt the happy rite.—
>
> *Hindu Plays*, II. *p.p.* 64-5.

3. The chief of all the infernal deities, the SUMMANAS or Pluto of the west, has, in one point of view, much resemblance to our *Yama*, as exercising a sovereignty over the dead, and as being the king of Hell ; whilst in another, as the chief of the infernal deities, he is identical with our VESAMUNI, or the Indian *Kuvéra*. The poet embodies his various names in the following verses :

දනිඳුකුවෙර වෙසමුනියක්රද දන  ද
සිරිද නරයහන් කිඳුරිඳු රජරජ  ද
නිඳු උතුරුනා රුඳු—

He is the lord of wealth, and is thence named *Daniňdu* or *Danada*, a name which has some resemblance to Pluto's Latin designation, *Dis*, signifying "wealth." He is represented as extremely deformed, as indeed his Grecian parallel is described "blind and lame ;" and hence he is called *ku*, "vile" and *vera*, "body"—*Kuvéra*. From the circumstance of one of his cities being called Visana, he is named *Vesamuni*, although some suppose that it means "Son of Visa." He is called *Yak-rada*, that is, Summanas, or chief of all the *Yakhos*, or the infernal deities of the Greeks.

ඖවියකඝනඑවර-අලකම්දනම්පුරව  ර
වෙසමුනි රදපවර-වෛතසිකරනාබැවින්මෙහෙව  ර

*Kawmini-koňdala.*

In the *Vana Parva* of the "Mahábhárata," it is stated that *Kuvéra*, the son of Pulastya, by his attentions to his grandfather Brahma, was made immortal, and appointed the god of wealth ; that his capital was *Lanká* or Ceylon ; and that his attendants were demons. It is doubtless his tale which induced the ancient historians of this island to regard its inhabitants before the arrival of Vijaya as "supernatural" "non-human" beings or "demons." But I am reminded by my pandit, that this notion of "demoniac inhabitants," whom Vijaya found on his arrival in Ceylon, may be also traced to the fact that *Rávaṇa* the ancient king of Ceylon is mentioned in the *Uttara Rámáyaṇa* and *Padma Purána* as the progenitor of the

*Rákshó*, or a distinguished member of a demonaic race. As a deity in whose hands are the destinies of mankind, he receives the appellation *Siri-dá*, "the promoter of prosperity." Unlike other deities, who are represented as being seated on brute-beasts, Kuvèra is said to ride on a human being, a circumstance by which he receives the name of *Náráyana.* He is attended by Kinnaras, the musicians of Heaven, and is thence called *Kiňduriňdu.* He is esteemed very powerful, and is thence called *Raja-raja*, "the king of kings." Like the Roman *Dis*, of whom it is said by Cicero, that he is so called, because "all the natural powers and faculties of the earth are under his direction," *Kuvéra* is the Master of the inestimable treasures of the earth, and more especially of the nine gems, (of which we shall speak hereafter,)—and is therefore called *Ní indu* 'chief of treasures.'

ඉසුරුදනදසියනිකෙලෙස්තැනරදන.
උතුරුදිගිදුපුරදිනිමෙපුරවැජඹෙන

*Sęlalihini-Sandésaya.*

He is the Regent of the North, and is thence called *Uturu-ná.* Mount Kailásha is his abode jointly with *Sivá*, who is said to be Kuvéra's friend—thence the appellation *Rudu-saha.* But Álaka is his principal city, which is therefore received by our bards as the centre of all those regions which teem with wealth:

ඉසුරෙපසිදුදියදෙස්වෙසමුනිසෙසින

*Parawi Sandésaya*

The nine *Nidhi* or 'treasures' are enumerated in the following stanza given in several Sanscrit works:—

පද්මෝශ්‍රීයාං මහාපදම ශංඛෝමකරක ඡපෞ
මුකුන්දනන්ද නීලාශච ඛර්ශච නිධයෝනව

They are translated by Professor Wilson to be the "lotus," "large lotus," "shell" or "conch," "fish," "tortoise," "crest," "a mathematical figure used by the Jains," *nida* "colour" and "dwarf." But, evidently gems are meant: and I may here give Mr. Kindersley's translation of the passage, through the

medium of the Tamil; viz., the coral, pearl, cats's-eye, emerald, diamond, sapphire, ruby, and topaz. The ninth is left undetermined. It is *níla* which probably means the *níl-amani* of the Tamils or the *níl-keta* of the Siŋhalese, which is commonly called "the blue sapphire," and esteemed of great value. And I may here advert to the fact that the blue sapphire is sometimes formed of the Ceylon ruby, which may be seen in various stages of formation, exhibiting the shades which are produced by a mixture of the lake and blue.

4. The Déva who has not his parallel amongst the Grecian and Roman gods, the most inimical to Buddhas, is said to be MARA, the ruler of six heavens. No intelligible reason is, however, given for his antagonism to Buddhism, but "the fear by his discourses many beings would obtain the blessedness of the Bráhma lókas, and the privilege of *nirwána*, which would prevent the repeopling of the inferior world in which he reigned, when the Devos then inhabiting it had fulfilled their period of existence."* Though acknowledged to be a being of mighty powers, he is nevertheless represented, owing to this opposition, as a Déva full of "cunning." In the life of Buddha given by Csoma Körösi, he is called "the devil," and is described as being extremely envious, and as reflecting thus: "Should he become Buddha all animal beings instructed by him, will grow judicious and wise, and then they will not obey my commands or order." This hate of his towards Buddha, seems to resemble that of Satan; and his temptations the assaults of the Devil. For, when Siddharta left home to become Buddha, Mára, the "agent of Sin," instantly appeared, saying, "let me stop the great mortal," and rising aloft into the air, thus addressed him: '*Mahawéro*, depart not: on the seventh day from hence, the heavenly *Chakkaratanan* will most certainly come to pass. Then thou shalt exercise sovereignty†

* Spence Hardy "Manual of Buddhism," p. 171.

† "The devil taketh him up into an exceeding high mountain, and

over the four great quarters of the earth, together with their 2000 isles: Blessed, wait." The great mortal asked 'Who art thou?' 'I am Vasavatto.' "I am aware that both empire and universal dominion are proffered to me: I am however not destined for royalty: depart Mára; approach not thus.'* When Gautama became Buddha, Mára brought an army equipped with swords, axes, javelins, bows, arrows, spikes, clubs, &c., to wage war against the great sage. The army is described to have been so great in number, that it well nigh overpoised the earth. The soldiers assumed many terrific forms of wild animals, demons and spirits; and continued rushing towards the spot where Buddha sat under the Bó tree. Apparitions of ill omen descended in various forms, proclaimed the advent of Mára. Thousands of appalling meteors descended from heaven. The earth quaked; and there was darkness throughout the world. Indra, Bráhma, and a host of other celestials who were in attendance upon Buddha fled at the appearance of Mára, who came mounted upon his charger, the Elephant called *Girimékhala.* The great sage was thus left alone; and the assault commenced. Crashing storms of fire, brimstone, and weapons came down; but they hurt not one hair of Gautama. A hundred thousand volcanos were hurled at him; but they assumed the form of garlands on their approach to Buddha. Every other imaginable devise was likewise ineffectual; and Mára fled with shame. His enmity did not cease here. When Buddha announced his approaching dissolution, Mára imperceptibly exerted his influence over the mind of Ananda, and prevented him from comprehending this exposition, though repeated twice.†

---

showeth him all the kingdoms of the world and the glory of them. And saith unto him, All these things will I give thee &c." Matt. iv. 8, 9.

* Turnour's version of the "Buddhavaṇsa" (Bengal Asiatic Society's Journal vii p. 30.)

† This interference prevented Ananda from entreating the sage to prolong his existence which he had the power of doing even for a whole *kalpa* if he was duly requested thereto.—Turnour, *loc. cit.* p. 1001.

Sixty two artifices, of which Mára was guilty, are spoken of by the votaries of Gautama ; and it is generally believed by them, that he was the founder of all the systems of religions on earth, except Buddhism ; and that he sent our blessed Lord Jesus Christ into the world to set aside Buddhism, which was at the time captivating the minds, and winning the affections of thousands in the East. In a little work* extant among the Siṇhalese, the following passages occur in reference to the belief above referred to :—

---

* This appears to be a fragment of a larger work, entitled the 'Histories of Milindu and Kristá (Christ).' There is no mention whatever of the person by whom it was written. It contains, among other matters, a narrative of the circumstances attending the birth and crucifixion of 'Christ' of 'Nazareth.' It combines a life of our Saviour, with a few particulars connected with the controversial dialectics of Milindu and Nágaséna. The writer does not (as he would, if it were a fabrication give it a show of inspired authencity, by stating it to be the production of a Rahat ; but merely says, that the two stories (whether a tradition handed down, or a written work, it is not clear), were brought down by certain Buddhist priests, who arrived on a religious mission on this Island, during the reign of Vialagam Báhu, which was, according to "Mahávaṇsa," A D., 519 : when indeed, we find from the "Mahávaṇsa," a body of priests were assembled, for the first time in the island, to commit to writing the oral traditions concerning the national religion of Laṇká. (See "Mahávaṇsa," p. 207.) The countries too from which the priests came are mentioned, and they are those which frequently occur in other Buddhistical works—"Aramana, Malawa, Ghandára, Pygòa, Ielalup, Rakkadu, and Sagal." The birth of Christ is stated to be in the time of Nágaséna 485 A. B. This, it is important to observe, is at variance with the date for the same event assigned in other Buddhistical works. [The "Mahávaṇsa," says that Buddha had predicted the birth of this sage 500 years after his death. In the Tibetan annals (see Asiatic Researches, xx. p. 400) the same prediction is recorded and that Nágárjuna would appear 400 years A. B. The *Rájá Tarangini* shows that this celebrated personage visited Kasmir about 460 A. B. See Bengal Asiatic Society's Journal, v. p. 536.] These discrepancies which unsettle the date given in the "Mahávaṇsa." a book which is considered as sacred as any of the Buddhistical Scriptures, are invested with much importance in a historical point of view, shewing clearly the correctness of Turnour's belief that the Buddhistical era was antedated by Mahánáma, or the early historians to whom he was indebted, to the extent of 60 or 65 years. They also intimate, consequently, a strong circumstance in favor of the genuineness of the work here noticed. But it must be borne in mind that this history bears date 2305 A. B. (which is 1762 A. D.) after the Dutch had introduced Christianity amongst the Siṇhalese, and long after the Portuguese had made the natives acquainted with the history of Jesus Christ. From the language too, in which it is written (and which contains amongst other words the Portuguese word *kánu* instead of the Sinhalese *nesun* for "ditch,") this appears beyond all manner of doubt to be what it does not disguise to represent—the production of a modern date. Whether, therefore, it is an invention of the Buddhists, a

"And when Wasawarti Mára saw that king Milindu had thus set aside his two and sixty artifices, and his established moral and ceremonial customs, he reflected thus : 'King Milindu

fabrication of the Buddhist priesthood, to bring contempt on our holy Religion is a matter well worthy the attention and investigation of Oriental Scholars to whom, and to the Asiatic Society in particular, I am prepared to submit an English translation in MS. of this little work. Opposed, however to such a supposition is the undeniable and well-known fact, that Buddhists look upon Christianity without jealousy,—nay more, that there is a disposition on their part to conform to Christianity along with Buddhism The Rev. D. J. Gogerly says, in a paper printed in Sir E. Tennent's work on Christianity in Ceylon, p. 240 :—" I have seen it stated in a controversial Tract written by a Buddhist priest of Matura, not fifteen years since, that probably Christ in a former state of existence was a God, residing in one of the six heavens (a position which they represented Gautama as having occupied immediately previous to his birth, as Buddha); that animated by benevolence he desired and obtained a birth as man, and thought truth so far as he was acquainted with it." Nor is this a creature of modern and enlightened times. So far back as the age of the great Asoka, the liberal monarch of Asia, we find that far from any hostility being shewn to other religions, Buddhists actually honored them. Thus, in one of the Inscriptions of that Buddhist sovereign we find it declared (See Max Müller's *Buddhism and Buddhist Pilgrims*, p. 23,) that " there are circumstances where the religion of others ought to be honored. And in acting thus, a man fortifies his own faith, and assists the faith of others. He who acts otherwise, diminishes his own faith and hurts the faith of others." See also Huc's *Tartary, Thibet and China, p.* 210.

The following concluding passage, contains important data for the elucidation of Ceylonese and Indian history. " This is the history of the Tirtaka. * * He is called by the Tamils *Nasarinu* (Nazarine); by the Siṇhalese Tirtaka, * * a religious Teacher; and by others *Kirsta* (Christ). He was born 485 years after the death of Buddha, the teacher of the three worlds. King Milindu entered upon his dialectic controversies in 490 A. B. Those controversies lasted nine months and nine days; at the termination of which the king became a convert to Buddhism, entertained Nágaséna, and 80,000 priests for 12 years. In 513 A.B. the Carpenter's Son was killed and buried. At this time by reason of an innocent Bráhman female having been killed, there was a famine for 12 years. [This event, as detailed in the *Rasavàhini*, a Pali historical record, serves to confirm the dates here given.] During this period Valagam Báhu reigned at Anurádhapura in Laṇká and erected 99 monuments and edifices. Two years and four months before the famine, which is called the *Beminiti séya*, two Priests from Lanká went to worship the great Bó, and visited the various places in the five and thirty cities in which Buddha had dwelt. During this pilgrimage was the famine, called *Beminisiti sẹya.* They next proceeded to Sagal, and there were 80,000 Priests in the four Temples of that city.

They having heard the renown of Laṇka in respect of the Buddhist religion established in it, were highly delighted and expressed their gratulations. The two priests who went over were kindly treated by them. After the expiration of the 12 years, during which the famine had lasted, a body of Priests came to Ceylon on a religious mission from the countries of Mallawa, Gandára, Aramana, Pygoa, Pelalup, Rakkadu, and Sagal. They rendered much service to the religion of Buddha, by elucidating his doctrines, and by the compilation of books concerning his *dharrma.* At that time these two histories, viz., one relating to Milindu, and the other regarding the Tirtaka of a Carpenter's Son, were brought

has locked up the four hells which exist for my spiritual support, and has also set aside my two and sixty hidden (unrevealed) devices, (artifices)'; and summoned before him a son (a being) of Vasavarti, and said unto him, 'You were first defeated by doctrinal disputations with Milindu, the son (a deva) of *Nirmánaratiya* heaven, and other heavenly beings were likewise defeated by him. He has subjugated all the six heavens. He also entered into a controversy with a deva of *Yama*. Him also he has defeated. Since then Nágaséna has vanquished the six heavens by defeating Milindu. By reason of our having originated the disputation, he is incensed against me; and with a view to destroy my sixty-two devices, he has departed to the human world, where he is born by the name of Milindu. He now reigns in the city of Sagal, as the supreme monarch over a hundred kings of Dambadiva. Since therefore you were first defeating by him in controversial disputations, go and be born in the midst of the city of Sagal, and in the womb of a female of the low Carpenter's caste. And when you shall have grown up, be you Monarch over the whole of Dambadiva. Snatch away the sceptre of Milindu's kingdom. Open the gates of the four hells, which exist for the support of my existence: and uphold and protect my two and sixty secret devices, which shall last for ever and ever. (*lit:* during the entire *kalpa.*)' Upon this injunction of Vasavarti Mára, the Mára-son came down from the heaven called *Paranermita-vasavarti*, and at midnight was conceived in the womb of a female of the Carpenter's caste in the city of Sagal."*

---

down by the aforesaid two priests on their return to Lanká. It is now (the date of the writing) 2305 years after the time of the great Buddha."

* A similar story is given in the "Milindapprasna," as to the birth of Nágaséna. "At the intercession of Assagutta Terunnánsé, on behalf of the Buddhist priesthood generally, Indra, the supreme of the Devos, invoked Nágaséna, who was in the *Ketumati* heaven, and called *Mahasena*, to be born in the human world, for the purpose of confuting Milindu, to which Nágaséna, after much hesitation, consented. Accordingly he was conceived in the womb of the wife of Sonuttra, a Brahman, and an inhabitant of Kajangala, on the borders of the Himanta mountains."—*Milindapprasna.*

Mára is called *Káma dévó*, or "god of pleasure," by Kosma Körösi in his Tibetan Annals. We are unable to find the authority for this in any of the works on Buddhism extant in Ceylon; but it is a fact most of the names given to the Sinhalese Cupid, or *Káma déva*, are also given to *Mára*, which name signifies "death," or "destroyer." It also is remarkable that Mára's three daughters, who were dispatched to tempt Gautama, are called *Ranga*, "dance," *Tanhú*, "love," and *Rati*, "sensuality"; the last name being also given, according to the Hindú Fabulists, to the consort of the Indian Cupid, whence he is called *Riyahimi*. Since he is identified with Mára, commonly surnamed *Vasavarti*, from the appellation given to the heaven of which he is an inhabitant, it may be convenient to notice here a few particulars regarding KAMA DÉVA.

He is represented as *Ananga*, or "bodiless." This is either metaphorical as to his influence on the mind, or with reference to the legend of his having been reduced to ashes by the anger of *Síva*, when pierced by *Káma's* arrows, and thus inspired with love for *Parvati*.* Referring to the last mentioned circumstance, he is called *Maru*, "destroyer;" *Mal-anga*, "dead body;" *Vasam-sera*, "unequal body;" and *Un-aga*, "deficient body." Regarding him as a creature of the mind, he is *Mana-yon*, † "mind-born;" or *Naraka*, "human body." He is the embodied form of the god of gods, whence he is called *Tunu-hiru*, "body of sun's splendour." He is the agitator of the hearts of Bráhma, Vishṇu, Síva, and Indra, and is thence called *Samara*, "the warrior." He inflames the minds of men for sensual pleasures, and is therefore called *Mada*, or 'intoxication': in reference to which Kálidasa in the following beautiful lines in his *Sakuntalá*; sings:

* Hindú Plays, ii. p. 21. Also see Prof. Monier Williams' *Sokuntala*, p. 101.

† Having offered adoration to the mind-born divinity, let the wife worship her husband with ornaments, flowers and raiment, thinking internally with entire complacency '*This is the God of love.*'—The Puránas.

අද්‍යාපිනූනං හරකෝපවහ්නිඃ ත්වයිජ්වලත්‍යෞර්වඉවාම්බුරාශෞ
ත්වමන්‍යථා මන්මථමද්විධානාං ; භස්මාවශේෂඃ කථමිත්ථමුෂ්ණඃ

"Verily even now the fire of Siva's wrath burns in this like the submarine fire in the ocean : otherwise how couldst thou, O agitator of the soul ! with nothing left but ashes, be so scorching towards such as me?" Ananga is represented, like his Grecian parallel Eros, with a bow and arrow. The description of these weapons in our books is truly beautiful : the bow is a sugar-cane, (whence the appellation of *Siya-sew*, or a "creeper-bow," sweet in its taste, and lovely in its appearance ; the bow-string is made of a line of bees, those lovely denizens of the forest, who sip the liquid sweets of flowers ; and the arrows are five in number (*pan-sẹra*), each tipped with a flower. Hence the name *Mala-viya* or *Kusum-dunu*, "flowery bow," which the poet describes in the following lines :—

සමත්ගෝ ඉද්දමහනෙල් අඹකුසු ම
මෙවන් පසැරසඳසන හාකරනිසු ම
රොසිනම්බිරිඟු විසපොවම්න් ගතිඅත ම
සෙයින් රම්ඳු සුදයට පැලඹෙයි සර ම

The five species of flowers here described are : the white dazzling *Jasmine*, the matchless *Asóka*,* the unspotted *Idda*, the far-famed *Maha-nel* (Lotus. *Nelumbium speciosum*), and the odorous *Mango*.† They are also given in the following passage in the paraphrase to the *Amara Kósha* :—

අරවින්දමශෝකංචචූතංචනවමල්ලිකා, උත්පලංචෙතිපංචෛතේ පංචබාණස්‍යසායකාඃ

and are different from those enumerated by a Siṉhalese poet in the following line :—

පිච්ච කොමද කීන දෙඹ බෝ ලිද්ද මේමල් සැරපසේ.

which are the *Jasmine*, *Idda*, *Kína*, *Domba*, and *Bólidda*.

---

* This is the *Jonesia Asóka*, which is represented as producing a very lovely flower, and it is supposed that the contact of the stem of the Asóka tree with the foot of a woman of superior beauty, makes it blossom.

† It is believed, (and I here speak upon the authority of Mr. W Ferguson), that the tree which produced the *balm of Gilead* in the Scriptures, *Bdellium*, *Myrrh* and *Incense* or *Frankincense*, are the produce of the same natural order of plants to which our *Mango* belongs.

Sir William Jones differently describes them in the following beautiful lines, giving a descriptionof the *mal-sera* or "flowery darts" of Cupid.

"He bends the luscious cane and twists the string,
With bees how sweet, but ah! how keen their sting.
He with five flow'rets tips the ruthless darts,
Which through five senses pierce enraptur'd hearts:
Strong *Champa*, rich in odorous gold,
Warm *Acra* nursed in heav'nly mould;
Dry *Nagaser* in silver smiling;
Hot *Criticum* our sense beguiling,
And last to kindle fierce the scorching flame,
*Love shaft*, which gods bright *Bela* name"*

The Eastern Cupid bears upon his banner the *Makara*, an aquatic monster like a fish; and in the *Makara-dvaja*,† Dissanayaka describes him as a "fierce warrior, approaching to battle."—

මත්ගජසරත්සඳසතතිමිරදිරඳ රා
කොත්බැඳමුවරසිඳුගොසකරපසඟතු රා
සක්පිඹකොවුල්උක්දුනුගෙනතඹරසැ රා
විත්වනිසුදටමිගබැනරුදුරුපන්සැ රා

"Mounted on the elephant of darkness—holding the umbrella of Autumn, hoisting the banner of *Makara*, ‡ enjoying the music of the bellowing seas; playing the lute (chank) which produces the *kókila's* (cuckoo's) notes, and holding the sugar-cane bow with lotus darts."

According to one of the *Purànas*, the worship of Káma, was instituted by Síva, in pity of the fate to which he had

---

* "In the *Romaunt of the Rose* there is something of a similar allegory; Cupid is armed with 'ten brade arrows,' of which 'five were shaven well and dight,' and of a nature to produce virtuous attachment; while the other five 'also black as fiend in hell' were *Pride*, villaine, &c., and of pernicious properties."—*Wilson's Mégha Dúta*.

See various descriptions of 'the five flowers,' in Professor Williams' *Sakuntalà*, note at p. 100.

† Literally "Fish-banner," the name of a poem.

‡ Although the name signifies a 'fish' and its representation in the Indian Zodiac has a resemblance to the *Pisces* of the western Astronomers; yet I cannot help thinking that this is the crocodile of Egytian worship. The *Makara toraṇ* over porches in Buddhistical temples clearly prove this to be a crocodile. Professor Wilson describes the animal as "monster," which doubtless it is, judging from the representations given of it in Buddhistical Temples.

consigned him. This is represented to take place in a grove of *Aṣóka* trees, where Káma incurred the wrath of the three-eyed god. Although Europeans have frequently dwelt upon the want of affection in the matrimonial relations amongst Asiatics, it is nevertheless a fact, that they are much attached to their wives, who reciprocate the feelings of love to an extent even unknown in the fictions of the west. Various passages may be cited from the books illustrating this position ; but one will suffice from a Hindú poet, who thus feelingly describes the lament of Uma, when Káma was blasted by the lightning of Síva's scorching eye : – " She swoons" ; but

> Too soon her gentle soul returned to know
> The pangs of widowhood,—that word of woe !
> ' Speak to me Káma' ! why so silent ? give
> One word in answer, – doth my Káma live ?
> There on the turf his dumb cold ashes lay—
> That fiery flash has scorched the soul away...
> Sure woman's heart is strong, for can it be
> That I still live while *this* is all of thee ?'

A remarkable passage occurs in the *Buddhavaṇsa*, in which three of the divinities to whom we have already alluded, are compared to Gautama, upon his first appearance in public, after attaining the position of the Great Teacher. I extract it entire :—

" Among themselves these people kept saying one to another, ' Friend who is this ? can it be the full moon descended among us out of dread of *Ráhu*, concealing the rays with which he is endowed ? such a one was never seen before.' Smiling at his suggestion, another said, ' This is the god of love with his floral banner ; dignified in person he has come to revel among us, having observed the great personal beauty of our monarch and of our fellow-citizens.' Laughing at him, another said, ' Friend, art thou mad ? the god of love has half of his body destroyed by the fire kindled by the jealousy of Isso (Siva), it is not he, it is the chief of the déva, the thousand-eyed deity (Indra) who has come here, imagining that this is the celestial city.' Another again, playfully ridiculing him, said, ' Friend, what nonsense art thou talking ! where are his thousand

eyes? where is his thunderbolt, and where is his elephant Irawana? Assuredly he is Brahma, who, having witnessed the indolence of the Brahmans, has come hither to teach the Vedas, and their accompaniments.' Another ridiculing all others said 'He is neither the moon, the god of love, nor the thousand-eyed deity, nor yet Brahma. He is the wonderful personage—the supreme—the teacher of the world.'"*

5. One of the Triad of Hindú adoration, and a deva who figures most conspicuously in the ancient annals of Ceylon, is, MAHA DEVA, commonly called SÍVA He has for his seat Mount Kailasha, every splinter of which is represented as an inestimable gem. Hence the appellation of *Keles nivas*. His terrestrial haunts are said to be the Himálaya region, or that portion of it which is known as the mountain of the moon. He is called *Ti-net*, because he has "three eyes:" one of which is placed in the centre of the forehead. The Sanscrit form of this name, *Tri-lóchan*, bears great affinity to *Tripthalmos*, an epithet of Zeus, whose statue was found, says Sir W. Jones, 'so early as the taking of Troy *with a third eye in his forehead.*' One of our poets describes him

තිසුලවිගත් කරින් කළුපැහැරැගත්උගුරි න්
සම්සළුගත් බරින්මදක් උමයගන ගත් සිරුරි න්

Holding in hand an instrument of three points, having a blue neck, wearing hides of animals, and concealing his wife Uma in his body.

Also,

දල අඩ සඳ බදිත ගොරසප් හරක් පලඳි න
රඟකරන දින දින මහළු ගොන් වාහනින් ඇවිදී න

Wearing the crescent moon on the head, and a fierce serpent on the neck, dancing daily, and using a bullock for his conveyance.

Kálidása, the prince of the eastern Poets, thus writes of this déva, and we quote from the elegant translation of his *Mégha-dúta* by Professor Wilson :—

Hence with new zeal to *Siva* homage pay,
The God whom earth and hell, and heaven obey;
The choir who tend his holy face shall view,
With one in thee his neck's celestial blue.

* Bengal Asiatic Society's Journal, vol. vii. pp. 809, 810.

I have already referred to the cause of this stain in his neck. It is thus beautifully described in Wilkin's translation of a portion of the *Mahá Bhárata* :—

As they continued to churn the ocean more than enough, that deadly poison issued from its bed, burning like a raging fire, whose dreadful fumes in a moment spread throughout the world, confounding the three regions of the universe with its mortal stench, until *Seev*, at the word of Brahma, swallowed the fatal drug to save mankind, which remaining in the throat of that sovereign Deva of magic form, from that time he was called *Nilkant*, because his throat was stained blue.

The worship of this Déva commenced about 200 years after Buddhism had sprung up amongst the Hindús ; and it appears that although it was at first resisted by the votaries of Brahma, yet that the popular feeling was so great in favor of the innovation, that Brahmans speedily gave way, and embraced the new faith. The ceremonials connected with the worship of this Déva, who presides over generation, are too disgusting and revolting to be described here ; and I shall therefore dismiss the subject by simply quoting from an orthodox Buddhist poet, who exclaims—

අයෙත් පිළිකුල්වන අයෙක් සිතරාවඩව නා
ලිඟුසටහන් රැගෙන, කලයි පුදපල නිම්ද ඉන්ව නා

What benefit is there from sacrifices to a Deva, whose ceremonial worship, consisting of a show of the emblem of generation, is productive of either disgust or lust in the mind !

6. VISHNU, the object of adoration of thousands in India, holds a distinguished place in the Buddhistical annals of this country ;—and there is scarcely a single temple* in Ceylon in which a room is not set apart for an image of this Deva. He is variously described in our books, according to his different qualities, acts, and virtues.

According to the *Mahá Bhárata* it was Vishṇu, who at the instigation of the sun and moon decapitated *Ráhu*, who is described as an *Asura* or "demon," that stole a draught of

---

* In some instances, as at Láṅkátilaka, near Kandy, the *Vihara* and the *Devála* are under the same roof. See Forbes' Ceylon.

*Amrat* or "Ambrosia," at the churning of the ocean. Hence Ráhu's enmity to those planets, whom the Buddhists believe are periodically seized upon by Ráhu to avenge the part they are said to have taken in the detection of his theft.

The names of this Déva, as of other deities, are descriptive. He is *Vas-dew*, "the son of Vása-déva," and *Uvindu* "ranks next to the chief *deva*." He is *Kamal-kal* or *Siri-piya*, the husband of *Laksmi*. He has *Siw-ba*, "four arms;" *Piyum-net*, "lotus eyes"; *Damóra*, "a sash round his belly;" *Hem-salu*, "a golden mantle" on his body; *Sak-pana*, "a ring" in one hand, and "a conch shell" in the other; and *Piyum-neba*, "a lotus navel." This last designation was owing to the part Vishṇu had taken in the reconciliation between *Parvati* and *Mahadeva*, who found their concurrence essential to the perfection of their offspring. This was so far recognized by the Egyptians and the Greeks, that the former, we learn from Wilford's Essay on Egypt, had 'a vast *umbilicus* made of stone,' in their Temple of Jupiter-Ammon; and that the latter kept an *umbilicus* of white marble, at Delphi, in the sanctuary of the Temple, where it was carefully wrapt up in cloth. He is represented as being *Kalu* or *Nilaṅga*, 'blue;' and as *Gurulu-dada*, "riding on a *Gurulu*," between whom and the serpent race is a deadly feud, originating in a dispute between their respective parents *Kadru* and *Vinata*; the wives of Kasyápa. In a Hindú legend (as in the following extract from the *Buduguṇálaṅkára*,)

ගත් සකදු අතට, පත්දිවගුරුළු සහයා ට
වැද සමුදුරදීයට, සැතපිනතනාදරනවැළප් ට

he is described, as

> "pillowed on his snake-couch mid the deep."—*Muddra Rakshasa.*

and as

> reposing upon the thousand heads of *Sésha*, amidst the waters by which the earth is overspread.

The story, in reference to which he is called *Govindu*, or 'chief of herdsmen,' is thus narrated by Miss Spier, in her "Life in Ancient India," p. 466.

"At the conclusion of the rainy season, when the skies were bright with stars, the herdsmen were busily engaged in preparing a sacrifice for Indra; but Krishna, resolving to put the king of the celestials into a passion, persuaded Nanda to worship mountains and cattle, and have nothing to do with Indra. 'Kine,' he said, 'are our support; we have neither fields nor horses; we wander about happily where we list, travelling in our waggons; we are then bound to worship the mountains, and cattle, and have nothing to do with Indra.' Offerings of curd milk and flesh were in consequence presented to the mountain, and the worshippers circumambulated the cows and bulls, who bellowed as loud as roaring clouds. Indra's anger broke forth in a furious tempest, which lasted seven days and seven nights, but Krishna protected the distressed community by plucking up the mountain, and holding it aloft as an umbrella until the tempest ceased, when he planted it again on the earth. Upon witnessing these marvels, the herdsmen wished to render worship to Krishna, but he desired them not to inquire into his nature, but to be contented that he lived among them as a *friendly relative*."

Hence the appellation of *Diya-banda*, given to this déva by our poets.

In the churning of the ocean, Vishṇu seems to have taken an active part. It was undertaken by his advice, and with his assistance to recover *Srí*, whom Indra lost under the following circumstances. A sage named Durwasas gave to Indra a garland, which the latter, without attaching to it much value, threw at his elephant, and he to the earth. Offended at this sight, Durwasa cursed Indra, and pronounced that the latter should lose *Srí* or 'goddess of prosperity,' who reigned supreme in the several heavens appertaining to that déva. She accordingly disappeared; and the consequence was, that the world fell into decay, sacrifices ceased, and the gods were enfeebled. To avert further evil consequences, the ocean was churned to find her.* At this search by dévas, demi-gods, (who are sometimes designated *dévatás* and demons,) various things and persons were found. They are called *Ratnas* or 'gems,' and are enumerated to have been *Danavantarí*, the physician of the gods; *Lakshmi*, the goddess of beauty; the *Apsarases*, or

* Pr. Wilson's *Vishnu Purána*.

nymphs of Indra's heaven; *Sura*, the goddess of wine; the *Moon*, said to be the jewel worn by Krishna; *Sura-turu*, or the wish-conferring tree; *Surabi*, the cow of abundance; *Airàwana*, the elephant of Indra; the bow of Vishṇu; his *Sankha* or shell poison; and *Amrita*, or Ambrosia.

The origin of the *Apsarases*, from *ap* 'water,' and *sara* 'to move,' is thus related in the *Rámáyana* :—

Then from the agitated deep upsprang
The legion of *Apsarasas*, so named
That to the watery element they owed
Their being. Myriads were they born, and all
In vesture heavenly clad, and heavenly gems:
Yet more divine than native semblance, rich
With all the gifts of grace, and youth, and beauty.
A train innumerous followed: yet thus fair
Nor God nor demon sought their wedded love:
Thus *Rághava* they still remain—their charms
The common treasure of the host of heaven.

The poison which was generated as above described was swallowed by *Síva;* and the blueness of his neck has been the consequence. The moon is supposed to be the repository of the *Amrita* or "ambrosia." "It is" says the *Vishṇu Púrana*, "replenished from the sun during the fortnight of the increase. On the full moon the gods adore that planet for one night, and from the first day, all of them, together with the *Pitris* and *Rishis*, drink one *kála* or "digit" daily, until the ambrosia is exhausted." In the *Hero and the Nymph*,* the poet says:

Hail glorious lord of night, whose tempered fires
Are gleaned from solar fountains.

This is in accordance with the Western notion, which is thus described by Milton:

"The neighbouring moon her monthly round
Still ending, still renewing, thro' m d heaven,
With *borrowed light* her countenance triform;
Hence fills and empties to enlighten the earth
And in her pale dominion checks the night."

* Hindú Plays, i. p 220.

To return however to the subject of the remarks:—Vishṇu is worshipped by the Buddhist as a déva whose name is hallowed by historical and religious associations; whilst the Hindús treat Buddha as an *avatár* or incarnation of Vishṇu. The story in the Puránas, is thus related by Wilford, in his Essay on Egypt and the Nile.*

"The Daityas had asked Indra, by what means they could attain the dominion of the world; and he had answered, that they could only attain it by sacrifice, purification, and piety: they made preparations accordingly for a solemn sacrifice and a general ablution; but Vishṇú, on the intercession of the devos, descended in the shape of a *Sannyási*, named BUDDHA, with his hair branded in a knot on the crown of his head, wrapt in a squalid mantle, and with a broom in his hand. Buddha presented himself to the Daityas, and was kindly received by them; but when they expressed their surprise at his foul vesture, and the singular implement which he carried, he told them, that it was *cruel, and consequently impious to deprive any creature of life*; that, whatever might be said in Vedas, every sacrifice of an animal was an abomination, and that purification itself was wicked, because some small insect might be killed in bathing or washing cloth; that he never bathed, and constantly swept the ground before him, lest he should tread on some innocent reptile: he then expatiated on the inhumanity of giving pain to the playful and harmless kid, and reasoned with such eloquence, that the Daityas wept, and abandoned all thought of ablution and sacrifice. As this *Máyá*, or 'illusive appearance' of Vishnu, frustrated the ambitious project of the Daityas, one of Buddha's titles is 'the son of *Máyá*.' He is also named *Saya Siṇha*, or, 'the lion of the race of Sakya'"

It is probably upon the belief of Gautáma being an incarnation of Vishṇu, that the Hindús regard the superficial hollow on Adam's Peak, as the impression which that déva left by stamping the mountain with his foot.† But I may remark, that even intelligent Buddhists of the present day ignore the statement in one of their religious books,—I believe the *Sadharmálankára*—"that Gautama left the print of his foot as a seal, to declare that Laṅká would be the inheritance of Buddha."

---

* Sir William Jones' works, ii. p. 577.

† Spence Hardy's "Eastern Monachism," p. 277.

I have already referred to the distinguished position which Vishṇu holds in the national religion of the Siṇhalese; and I may, before concluding, observe, that our poets abound in allusions to this deity, and one of them especially regards him as the only déva 'who was not dejected when Mára waged his fight against Buddha, as he sat on his *wajrásana* or diamond seat.'

අමාඇඳුරැඋන්සඳවිදුරසුන්ම තූ
පමානොවිපැමිණෙනසුදටවසව තූ
තමාමසැව්බලපාසිව්නොබාසි තූ
මෙමාවතනුකිමමොහුතෙදබලඅමු තූ

# A STATISTICAL ENQUIRY INTO THE STATE OF CRIME IN CEYLON.

BY JOHN CAPPER.

## PART I.—THE WESTERN PROVINCE.

THE amount and character of Crime existing in any country, is a study of so much importance, as to be well worthy the researches of the Statist and the Political economist. This is especially the case amongst a people who, like the natives of this island, are in a transition state ; governed by laws dictated by the civilization of the West, yet dwelling amidst, and deeply imbued by the customs and superstitions of the East.

It is to be regretted, that in Ceylon, as in many other parts of India, the materials for statistics exist in a very crude and defective state, especially those relating to population. At the same time, it may be observed, that native society in this island exists in such widely different forms from the condition of any European communities, and the springs of action affecting their good or evil conduct are so dissimilar, as to render it far less necessary to enter into the very minute statements and comparisons as regards this branch of enquiry, which are to be found in works on the criminal statistics of European countries.

The scattered nature of the Ceylon population, the primitive habits and limited wants of a larger portion of the people, the absence of any densely populated towns, the cheapness of food and clothing, the facility with which a livelihood may be obtained, and the consequent small extent of pauperism, are all circumstances so widely different from

those existing in Europe, and so opposed to the existence of crime, that one naturally looks for figures shewing a highly favorable result as compared with almost any other part of the world.

Taking the total number of convictions on an average of three years, as found in the Western Province, to which portion of the Island I am at present confining my inquiry, and comparing these with the extent of population, we find, to our astonishment, that the result is most unfavorable to the Island, as compared with similar returns from British India or the parent country. In Scotland, it appears that an offence against the laws is committed annually by one person in each 1,294 of the entire population; in England and Wales, by one in 929; in Ireland, by one in 582; in Bengal, by one in 1,219; whilst in the Western Province of Ceylon, an offence is committed yearly by one person in each 264.

But, startling as these figures appear, the case of Ceylon is very far from being an unfavorable one, if we proceed to analyze the returns, as I shall presently. As regards Bengal, and indeed British India generally, although I have alluded to the criminal statistics of that Government as officially published, I must explain, that there does not anywhere exist a faithful statement of the extent and nature of crimes and offences committed in any of the Presidencies, and least so in that of Bengal.

It is not generally known, out of India, that a very considerable number of offenders are dealt with in a summary manner by Indigo Planters and native Zemindars or landholders, who regularly hold courts of justice at their factories and dwellings. Not only do the riots of their own lands bring to their courts the offenders of their villages, but cases frequently come to them from more distant places. The evidence is taken by them with as much regularity, and far more fidelity, than in the Company's courts, and punishment is awarded without any hesitation on the part of the judge, on any complaint on the part of the people; from fifty lashes

usually administered on the spot, or two or three months' incarceration in the Factory Jail, down to a trifling fine, being about the range of the sentences.

I am not aware that any such instances of private administration of justice are to be found in any other part of the world; but so infamous is the conduct of the police of Bengal, and so corrupt the ordinary Company's courts, that a Hindú will frequently submit to anything rather than take his suit to one of them; and such is their horror of the police officials, that it is no uncommon occurrence, when a crime has been committed in a village, for the entire community to fly to the nearest jungle, rather than fall into the merciless hands of the darogah and his peons.

I believe, that the official returns of cases tried in Bengal do not shew above half of those actually taken to account; whilst the extent of undetected crime in India, must also be very considerable; and this should be borne in mind whilst instituting a comparison between the criminal registers of India and Ceylon.

I shall, in the present Paper, confine enquiries to the Western Province, hoping to complete it for the remaining districts of the Island in a future contribution. The following Table exhibits the operation of the Colombo sessions of the Supreme Court during the last six years :—

| | Murder and Homicide. | | Other offences against Person. | | Offences against Property. With violence | | Offences against Property. Without violence | | Other Offences. | | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted | Acquitted. |
| 1852 ... | 3 | 0 | 8 | 0 | 3 | 1 | 10 | 3 | 1 | 0 | 25 | 4 |
| 1853 ... | 6 | 7 | 2 | 4 | 7 | 3 | 15 | 4 | 3 | 3 | 33 | 21 |
| 1854 ... | 2 | 0 | 2 | 1 | 3 | 1 | 11 | 5 | 2 | 5 | 20 | 12 |
| 1855 .. | 7 | 7 | 4 | 6 | 10 | 10 | 4 | 6 | 2 | 0 | 27 | 29 |
| 1856 ... | 2 | 1 | 4 | 2 | 4 | 7 | 10 | 1 | 3 | 1 | 23 | 12 |
| 1857 ... | 7 | 1 | 5 | 4 | 7 | 3 | 13 | 1 | 2 | 0 | 34 | 9 |

The punishments inflicted in the above cases are shewn in the following Tabular Return :—

*Punishments awarded by the Supreme Court during six years ending December 31st, 1857.*

| | Hung. | Transported for | | | | Imprisoned for | | Flogged |
|---|---|---|---|---|---|---|---|---|
| | | Life. | 14 years. | 7 years. | 5 years. | 3 years. | 2 years and under. | |
| 1852 ... .. | 1 | 1 | 2 | 2 | 3 | 9 | 5 | 3 |
| 1853 ... ... | 3 | 0 | 1 | 13 | 0 | 13 | 7 | 3 |
| 1854 ... ... | 1 | 0 | 0 | 0 | 0 | 7 | 12 | 4 |
| 1855 ... ... | 3 | 0 | 0 | 0 | 0 | 11 | 13 | 2 |
| 1856 ... ... | 2 | 0 | 0 | 0 | 1 | 7 | 12 | 5 |
| 1857 ... ... | 2 | 0 | 2 | 6 | 0 | 9 | 13 | 4 |

If we compare the Capital punishments in Ceylon with the total Convictions, we find them to be as 1 in 840, whilst in England the proportion is 1 in 650 ; in Bombay 1 in 2,827 ; in Bengal 1 in 2,878 ; and in Madras 1 in 3,236.

If we examine the records of this Court, and compare them with the Calendars of former years, with a view to ascertain the relative proportions of offences against the person and offences against property, at various periods, we shall find from the accompanying Table, that, whilst the former class of offences has sensibly decreased, the latter class has not increased in anything like the same proportion.

*Convictions by the Supreme Court in the Colombo Sessions at various periods, shewing the number of offences against Person and Property.*

| | Offences against the person. | Offences against property. | Other Offences. |
|---|---|---|---|
| 1834 ... | 23 | 31 | 18 |
| 1835 ... | 19 | 14 | 2 |
| 1841 ... | 9 | 18 | 5 |
| 1842 .. | 6 | 30 | 2 |
| 1856 ... | 6 | 14 | 3 |
| 1857 ... | 12 | 20 | 2 |

Taking the above three periods of two years each, we find the average result to be, that in the firstnamed period the offences were about equal, in the second period offences against property stood at $3\frac{1}{5}$ to 1 against the person, and in the latter period at 2 against property to 1 against person. The latest returns I possess in reference to Crime in Great Britain shew, that for every offence against the person, there were in England and Wales 4, and in Ireland $\frac{1}{2}$ against property, while in Bengal the relative numbers appear to be $1\frac{1}{2}$ against property to 1 against the person.

From the first period to the last, it does not appear that the proportions of Convictions has shewn any increase, though the latter compares favorably with the middle period, as may be seen by the following Statement :—

| | Cases tried. | Conviction. | Percentage of Convictions. |
|---|---|---|---|
| 1834 ... | 95 | 72 | 75 |
| 1835 ... | 54 | 35 | 66 |
| 1841 ... | 58 | 32 | 55 |
| 1842 ... | 99 | 39 | 39 |
| 1852 ... | 29 | 25 | 87 |
| 1853 ... | 54 | 33 | 62 |
| 1854 .. | 32 | 20 | 61 |
| 1855 ... | 56 | 27 | 51 |
| 1856 ... | 35 | 23 | 66 |
| 1857 ... | 43 | 34 | 78 |

The average of the last three years is 65 per cent., omitting fractions ; of the middle period 47 per cent., and of the earliest period 70 per cent.

Turning from the labours of the Supreme Court to those of the District Courts of the Western Province, we find a considerable difference in the results on the records of each of them, arising chiefly from local causes. The returns in my possession extend over six years for the Colombo Court, but over only three for Kalutara and Ratnapura.

*Statement of persons tried and convicted in the District Court of Colombo, during six years ending December 31st, 1857.*

| | Offences against Person. | | Offences against Property. With violence. | | Offences against Property. Without violence. | | Other Offences. | | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. |
| 1852 ... ... ... | 5 | 0 | 0 | 0 | 7 | 7 | 8 | 8 | 20 | 15 |
| 1853 ... ... | 0 | 0 | 0 | 0 | 10 | 13 | 3 | 16 | 13 | 29 |
| 1854 .. ... ... | 0 | 0 | 0 | 0 | 12 | 27 | 9 | 4 | 21 | 31 |
| 1855 ... ... ... | 1 | 0 | 1 | 0 | 13 | 31 | 18 | 7 | 33 | 38 |
| 1856 .. ... ... | 0 | 0 | 3 | 0 | 10 | 29 | 13 | 16 | 26 | 45 |
| 1857 ... ... ... | 3 | 4 | 0 | 0 | 2 | 12 | 8 | 4 | 13 | 20 |

The capriciousness of the above totals, ranging, as the convictions do, between 60 and 30 per cent. of the cases tried, can only be explained by an analysis of the table. Adopting this course, we find that many of the cases consisted of contempts of Court, the offenders being generally dismissed with a warning as to future conduct. A considerable number in some years, were cases of Cattle stealing, an offence which has, since 1851, been removed from the jurisdiction of the Supreme Court, and made actionable in the District Courts.

The following Table of such cases, from the records of the District Court of Colombo, will shew the working of this alteration in the law.

*Cattle Stealing Cases in the Colombo District Court for the six years ending December 31st, 1857.*

| | Persons charged. | Convicted. | Acquitted. | Withdrawn or dismissed. |
|---|---|---|---|---|
| 1852 ... | 12 | 5 | 4 | 3 |
| 1853 ... | 23 | 10 | 12 | 1 |
| 1854 ... | 32 | 8 | 22 | 2 |
| 1855 ... | 42 | 13 | 9 | 20 |
| 1856 ... | 17 | 9 | 7 | 1 |
| 1857 ... | 10 | 2 | 8 | 0 |

The average of convictions in these cases, amounts to but 35 per cent., and it cannot fail to be observed, that whilst in the few last years, the convictions have materially decreased, the cases withdrawn and dismissed, owing to the non-appearance of prosecutors, have been greatly increasing. The above Table would induce us to believe, that the offence indicated was on the decrease; but, unfortunately, there is reason for knowing the contrary to be the case. It is urged, that since this class of offenders ceased to be prosecuted by the Queen's Advocate before the Supreme Court, they have become far more daring, relying with confidence on the delays and difficulties attending prosecutions in the District Court by private parties. The numerous withdrawals and dismissals indicate the degree of impunity which they are enjoying; and it may be well worth the consideration of the authorities, if it would not be advisable to instruct the several Deputy Queen's Advocates to take all such cases out of the hands of private prosecutors, and follow them up with the utmost vigour.

The next returns are those from Ratnapura and Kalutara, the figures of which differ very materially, though, on examination, the varying results may readily be accounted for by the peculiarities of the two Districts. Kalutara, it must be remembered, is the great centre of Arrack distillation, and we must not be surprised at finding a certain class of cases preponderating in the Court of the District.

*Return of Persons convicted and acquitted, or dismissed, in the District Court of Ratnapura, for three years ending December 31st, 1857.*

| | Offences against Person. | | Offences against Property | | Cattle Stealing. | | Other Offences. | | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. |
| 1855 ... .. ... | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 2 |
| 1856 ... ... ... | 2 | 0 | 1 | 0 | 1 | 9 | 3 | 1 | 7 | 10 |
| 1857 ... ... ... | 0 | 1 | 2 | 2 | 4 | 1 | 4 | 0 | 10 | 4 |

In this instance, the convictions have run tolerably even, the preponderance of the acquittals having been, as in most other courts, in cattle cases. The average for these three years shews the convictions to have amounted to no less than nearly 55 per cent of the persons charged,—a very favorable result, as compared with other Courts in this Province.

*Return of Acquittals and Convictions in the District Court of Kalutara, for the three years ending December 31st, 1857.*

| | Offences against Person. | | Offences against Property | | Cattle Stealing. | | Other Offences. | | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. | Convicted. | Acquitted. |
| 1855 ... .. ... | 0 | 10 | 0 | 1 | 4 | 11 | 1 | 1 | 5 | 23 |
| 1856 ... ... ... | 2 | 3 | 0 | 2 | 3 | 35 | 1 | 37 | 6 | 77 |
| 1857 ... .. ... | 2 | 2 | 1 | 6 | 1 | 28 | 0 | 5 | 4 | 41 |

It will be at once apparent, that the cases brought into this Court are much more difficult to deal with than in other instances. The habits of the people go far to account for the difficulty the authorities meet with in obtaining convictions, which here have not averaged above 10 per cent. during the three years under notice. The greater number of persons accused of "other offences," have been charged with rioting.

The Police Courts will now claim our attention; and first amongst these, both in importance and amount of work performed, is the Colombo Magistrate's Court. The Table below shews the number of Police cases instituted and decided in each of the last 6 years in this Court.

| | Cases Instituted. | Cases Decided. | Convictions. | Acquittals. | Dismissals. | Percentage of | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Convictions. | Acquittals. | Dismissals. |
| 1852 ... | 3899 | 3750 | 1455 | 180 | 2115 | 39 | 5 | 56 |
| 1853 ... | 3961 | 3927 | 1386 | 165 | 2376 | 35 | 4 | 61 |
| 1854 ... | 3469 | 3813 | 1327 | 163 | 2323 | 36 | 4 | 60 |
| 1855 ... | 3839 | 3906 | 1437 | 166 | 2303 | 37 | 4 | 59 |
| 1856 ... | 3627 | 3367 | 1270 | 121 | 1976 | 38 | $3\frac{2}{3}$ | $58\frac{1}{3}$ |
| 1857 ... | 3968 | 3423 | 1228 | 130 | 2065 | 36 | 4 | 60 |

The regularity of the results in these 6 years, is most satisfactory evidence of the steady administration of justice; for although the amount of work performed in the various years differs by five or six hundred cases, the proportion of convictions and acquittals remains unvarying. The large proportion of dismissals, amounting on an average to 59 per cent., indicates a great disposition amongst the natives to bring forward false and frivolous charges, engendered by ill feeling, arising from imaginary or real wrongs. On the other hand, very many of the dismissals are cases of simple disputes and quarrels between members of a family or neighbours, which are thus arranged by the Magistrate, accompanied by a reprimand and warning as to future good conduct.

The records of the Negombo Police Court shew a still larger proportion of dismissals, though a considerable number of these will be presently accounted for in a different manner. The following are the figures in their case :—

| | Cases Instituted. | Cases Decided. | Convictions. | Acquittals. | Dismissals. | Percentage of | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Convictions. | Acquittals. | Dismissals. |
| 1853 ... ... | 1425 | 1224 | 287 | 166 | 771 | $23\frac{1}{2}$ | 12 | $64\frac{1}{4}$ |
| 1854 ... ... | 1087 | 1055 | 212 | 84 | 759 | 20 | 8 | 72 |
| 1855 ... | 4292 | 3049 | 255 | 87 | 2707 | 8 | $2\frac{7}{8}$ | $89\frac{1}{8}$ |
| 1856 ... ... | 3855 | 4548 | 253 | 98 | 4197 | $5\frac{1}{2}$ | $2\frac{1}{4}$ | $93\frac{1}{4}$ |
| 1857 ... ... | 1452 | 1869 | 182 | 74 | 1613 | 10 | 4 | 86 |

The figures in this table shew a great irregularity during three of the years under review, though in the first and last of the period, the numbers agree precisely with each other. An analysis of the records of this Court goes to shew, that the great increase in the number of cases brought forward in 1855 and 1856, arose entirely from the District collectors under the Road Ordinance taking out summonses against persons liable for the annual tax, without troubling themselves to demand payment in the first instance ; thus endeavouring to make the Police officials the means of collecting the tax instead of themselves. The Magistrate, however, refused to entertain most of these charges ; hence the unusually large number of dismissals, and the apparent small percentage of convictions during those years. This practice was eventually put a stop to through the interference of the Government Agent, and the cases have once more sunk to their accustomed number.

In the Kalutara returns for three years, ending December 31st, 1857, we find a considerable falling off in the number of decisions, as well as in the convictions, during the last year embraced by them. The results are shewn in the accompanying Table :—

| | Cases Instituted. | Cases Decided. | Convictions. | Acquittals. | Dismissals. | Percentage of | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Convictions. | Acquittals. | Dismissals. |
| 1855 .. .. | 2157 | 2278 | 300 | 152 | 1820 | $13\frac{1}{2}$ | $6\frac{3}{4}$ | $79\frac{3}{4}$ |
| 1856 . ... | 2290 | 2309 | 304 | 175 | 1830 | 13 | $7\frac{1}{2}$ | $79\frac{1}{2}$ |
| 1857 ... ... | 2075 | 1900 | 173 | 101 | 1626 | 9 | $5\frac{1}{3}$ | $85\frac{2}{3}$ |

Much as these figures differ from the result of the Colombo Tables, they perhaps do not shew any greater discrepancy than might be anticipated from the different positions of the

two Courts. The above figures, too, are borne out by the returns from the Kégalla Police Court, as may be seen below :—

| | Cases Instituted. | Cases Decided. | Convictions. | Acquittals. | Dismissals. | Percentage of | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Convictions. | Acquittals. | Dismissals. |
| 1855 ... ... | 932 | 1041 | 121 | 77 | 843 | 11½ | 7½ | 81 |
| 1856 ... ... | 1073 | 1087 | 106 | 96 | 855 | 9¾ | 9 | 81¼ |
| 1857 ... ... | 857 | 792 | 97 | 55 | 640 | 12 | 7 | 81 |

The convictions and dismissals, in both these instances, approximate very closely ; and we may fairly presume, that the much smaller proportions of convictions in these rural Courts arises, not from any local defect in the administration of the laws, but rather from a less efficient Police, and a greater difficulty in collecting evidence amongst scattered and distinct communities.

The last of these Courts is that of Ratnapura, the work in which, during the last three years, is given in the annexed Table :—

| | Cases Instituted. | Cases Decided. | Convictions. | Acquittals. | Dismissals. | Percentage of | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Convictions. | Acquittals. | Dismissals. |
| 1855 ... .. | 891 | 678 | 90 | 32 | 556 | | | |
| 1856 ... ... | 763 | 1090 | 165 | 148 | 777 | | | |
| 1857 ... ... | 866 | 820 | 75 | 50 | 695 | | | |

If we now sum up the total crimes and offences on which convictions have been obtained throughout the Western Province of Ceylon during the last three years, and examine the proportion which these bear to the population, we shall be able to form an estimate of the relative criminality of this

as compared with other countries. The annual averages of these convictions in the various Courts stands thus:

| | Convictions. | | per cent. of cases. |
|---|---|---|---|
| Supreme Court ... ... | 28 | = | 65 |
| District Court, Colombo ... | 24 | = | 24 |
| Do. Kalutara ... | 5 | = | 50 |
| Do. Ratnapura | 6 | = | 55 |
| Police Court, Colombo ... | 1311 | = | 37 |
| Do. Negombo ... | 230 | = | 20 |
| Do. Kalutara ... | 261 | = | 12 |
| Do. Kégalla ... | 108 | = | 11 |
| Do. Ratnapura ... | 110 | = | 12 |

The total of all these averages gives us the annual number of 2,082, which, as I before stated, yields a proportion of one in each 264 of the entire population of the Province.

Unfavorably as this result contrasts with the statistics of other countries, it assumes a very different aspect, if subjected to analysis; and separating crimes from mere offences, we draw a comparison between Ceylon, India, and England, as regards these two classes of offenders. The result will then be altogether in favour of Ceylon, as respects real *crime* though still leaving a heavy balance of mere offences against the population of this Island. This analysis shews, that while there is but one person in every 13,419 who yearly commits a crime, there is one person in each 269 inhabitants who annually commits an offence: crimes standing in the small proportion of $2\frac{1}{8}$ per cent. of all offences against the laws In Bengal, crimes and offences are about equal. In England and Wales, they stand as 15 per cent. of crimes. In Ireland as 27 per cent.

Comparing the total convictions in all the Courts of this Province on an average of three years, with the number of

cases decided, and as compared with the English and Indian tables of convictions, we shall find them standing as follows:

| | |
|---|---|
| Supreme Court, | 65 per cent. |
| District Courts, | 29 ,, |
| Police Courts, | 20 ,, |
| Average of all, | 38 per cent. of cases tried. |
| Bengal, | 48 ,, |
| England, | 64 ,, |

There is no doubt, that the same cause which leads to the excessive preponderance of offences of a minor character, as compared with the population, when viewed against other countries, goes far to account for the smaller percentage of convictions, especially as we find the least percentage in the Police Courts, where this description of cases is dealt with. Whilst we may congratulate ourselves upon the very small amount of actual crime existing in Ceylon, judging from the statistics of the Western Province, we must admit the prevalence of much strife, dissension, and angry broils amongst the natives, arising partly from quarrels respecting the minute shares into which landed property is frequently subdivided, and partly from the vice of drunkenness, a propensity which, it is to be regretted, is greatly on the increase in many parts of the Island, but especially in the Western and Southern Provinces. It is quite impossible to institute any faithful comparison between the large number of frivolous charges instituted and dismissed in this and any other country, nor between the many Police cases, arising out of family and neighbourly disputes, of a trivial character, in which both sides being equally blameable, the Magistrate can do no more than dismiss them with a reprimand and caution to either party.

There is very little doubt, though the Police records fail to shew such to be the case, that by far the larger portion of feuds and petty assaults have their origin in the neighbouring tavern. The personal experience of Police officials and

Magistrates tends to prove this; and confirmation would appear to be found in the following Table, in which I have compared the number of taverns licensed in, and the arrack revenue derived from the various divisions of this Province, with the population and the number of Police convictions.

| District. | Population. | Taverns licensed. | Proceeds of Arrack Rent. | No. of Inhabitants to each Tavern. | Amount of Arrack Rent paid by each person. | Police Cases to each 1000 Inhabitants. |
|---|---|---|---|---|---|---|
| | | | | | s. d. | |
| Colombo .. .. | 42,810 | 73 | £18,317 | 882 | 4 3 | $20\frac{3}{7}$ |
| Salpiti Korale .. | 44,910 | 38 | | 1,187 | | |
| Sina and Hewagam Korales .. .. | 97,488 | 120 | 3,937 | 805 | 0 $9\frac{1}{2}$ | |
| Pasdum, Raygam, and Wawelwilla Korales, including Kalutara and Panadure .. | 115,623 | 196 | 1,533 | 590 | 0 $3\frac{1}{6}$ | $18\frac{3}{4}$ |
| Three and Four Korales | 61,591 | 124 | 3,830 | 520 | 1 3 | $15\frac{1}{2}$ |
| Alut Kuru and Hapitigam Korales .. | 104,842 | 61 | 5,751 | 650 | 1 $0\frac{1}{10}$ | $13\frac{3}{4}$ |
| Ratnapura .. .. | 82,921 | 54 | 938 | 1,720 | 0 $8\frac{1}{7}$ | $1\frac{1}{3}$ |

The above figures are averages of the last three years, and from these it may be seen that, to a great extent, the Police cases bear a relative proportion to the density of the tavern licences, and still more so to the amount contributed per head to the Arrack rents; the largest contributors to this branch of the revenue being also the most frequent visitors to the Magistrate's Court.

There is, indeed, a striking exception to this rule, in the case of the Kalutara and Panadure Division, where, although the proportion of licensed taverns and the number of Police cases agree, as in the other instances, we find the revenue per head the lowest in the scale. The only way in which we can account for this discrepancy is, by supposing that in this District, which is the great centre of arrack distillation, there

are large surreptitious sales of the spirit, which militate against the price paid for the arrack rents ; otherwise it is difficult to conceive, that a District which stands second on the list, as regards the number of taverns to the population, should yield less than half the amount per head than any other division of this Province.

I find that the number of stills licensed in the Western Province has been gradually on the increase, having been in 1854, 196 : in 1855, 290 ; in 1856, 332 ; in 1857, 244 ; and in the first five months of this year, 339. This increase is, however, attributable to the larger demand for arrack for exportation to the Presidencies and the Colonies, rather than to any greater local consumption, which is more likely to be checked by the greatly enhanced price of the article.

In the Tables contained in this Paper, no notice has been taken of the age of persons convicted, no such data being in existence. I may, however, remark, that juvenile offenders are in this country entirely unknown. In the same way, female criminals, who in Great Britain are as one to five males, can scarcely be said to exist.

The remarks which I have introduced into this Paper, are necessarily of a limited character, bearing as they do on but one section of this Island population. It will be highly interesting to compare the state of crimes amongst the various classes inhabiting the different Provinces of Ceylon,—the Tamils, the Kandyans, the Moormen, the Malays, the Siṇhalese, and trace the effects of growing wealth and intelligence upon their morals.

Should I succeed in obtaining the necessary returns from the remaining Districts of the Island, I will hope to follow up the present enquiry by a second and more copious Paper, reviewing the Crime of the entire Island.

# SIṆHALESE RHETORIC.

BY JAMES D' ALWIS, ESQ., ASSISTANT SECRETARY.

---

In the Essay, which on the 13th August, 1850, I read before this Society on, "The Siṇhalese language, its Poetry and Poets:" and which I have since published as an Introduction and Appendix to the *Sidat Saṇgaráwa*, I made a few general observations on "Siṇhalese Rhetoric," and also presented portions of the *Swabásha-alaṇkára*,* a work on Siṇhalese Rhetoric. I now return to the subject, and avail myself of the present opportunity of laying before you a brief outline of the properties of style.

There are thirty-five rules laid down in the *Swabásha-alaṇkára*, for the attainment of a rhetorically correct style. I shall here present the reader with a brief summary of them.

Where proper terms (other than tropes) are employed, being a natural resemblance to the things signified, the language is such as will contribute much to fix our attention, and is called *swaba*, *e.g.*

තුඩින්වක් සුරත්. මරා පැහැ කොමලපියෙන්.
ගෙලෙන්ඹහැති වරණරජ මියුරු වදන්සුවො සියල්

"The bird that has a red crooked beak, green delicate wings, three lines in the neck, and is capable of articulate sounds, is the Parrot."

The above is an example exhibiting a sentence devoid of rhetorical tropes, and presenting proper *nouns*, particular and determinate in their signification.

The writer proceeds to give examples in such of the other parts of speech as are most susceptible of vivacity and elegance.

---

* See "Sidat Saṇgaráwa," pp. 31, 82, 88, 184.

The *verb* is the next in order, and we select the following illustration from the *Kávyasékharaya* :—

දත්කැකුළුපෑලාපුරතල්සිනාසී ලා
බොලඳබස්දීලාකෙළිසියලඟදූලිගා ලා

"The babe sports about, exhibiting his budding teeth, smiling most lovely, chattering most tender expressions, and daubing (himself) all over his body with dust."

Here the word කෙළි 'sports' is particularly expressive of the habit of children, and contributes much to the vivacity of the expression. If instead of කෙළි the poet had used දිවේ "runs about" the expression would have been tame and weak.

In *adjectives* the same author gives a beautiful example, in describing the virtues of King Parákrama Báhu :

සමුදුරගැඹුරුගුණමඳුරුගිරිතරසරගු ණ
සිසිරකරසොමිගුණපවතිමොහුකෙරෙහිමමෙතුන්ගු ණ

"An ocean in profound learning—the Meru in firm steadfast qualities—a moon in gentleness—these three virtues did he possess."

The words ගැඹුරු, තරසර, and සොමි are, happily chosen ; the first conveys the depth of his erudition as vast as 'the fathomless profound'; the second his firmness and unwavering resolution, as steadfast as the great *Mandara*, mountain ; and the third his amiability of disposition, as gentle as the 'moon beams.'

Another mode of contributing to the vivacity of style is by the adoption of *rhetorical tropes.* Of these "comparison" is one ; and may be described as presenting a parallel between the case in hand, and some other that is calculated to call forth such emotion.

There are several kinds of comparisons. Where a comparison is instituted, the resemblance in a certain quality being stated, the figure is a *simile*, *e.g* :

සොමිසඳවන්නොවැකිල ප්
බලාඇගෙවතඹ ප්

"Having seen the splendour of her countenance, like the spotless gentle moon."

When the resemblance between the comparates is merely implied, the figure is a *metaphor*; as

ඇගේසුවලමොලක ත
ණිතරදිසිවිදුදමෙව්සිරිග ත

"Her delicate arms were like flashes of lightning."

The usual order of comparates is sometimes changed with a view to give prominence to the object to which a comparison is instituted. Thus we say, මේ ළමයා වාගේ බල්ලා දුවයි 'A dog runs about like this child.' There is greater vivacity in this sentence than if we expressed it බල්ලා වාගේ මේ ළමයා දුවයි, 'This child runs about like a dog.' In the latter the comparison is simply instituted, but in the former stress is laid on the propensity of the child to mischief, which it is intended to correct. So likewise, to use an illustration given in the work before us;

උවනෙව් නී පුබුදුපියුම්විය.

"A full blown lotus is like thy face (O gentle creature!")

The change of the usual order in the use of the comparates renders the compliment more expressive. A comparison is sometimes repeated by reversing the order of the comparates in the repetition, as when we say; ඌ වගේම මූත් හොරයි මූවගේම ඌත් හොරයි, "Like him is this fellow a thief, and like this fellow is he a thief." The repetition conduces much to the energy, or vicacity of expression. We shall present the reader with an example from the work before us:

උවනෙව් නී පියුම්, පියුමෙව් නී පිළිඋවන්.

"Thy face is like a lotus, and the lotus is like thy face (Gentle creature").

A comparison or metaphor limiting the similitude of the subject compared to one particular object, conduces greatly to elevate or degrade the subject, according to the design of the writer or speaker; as when we say නිඋවන් කමලක්හා, මසුදුසු. 'Thy face is (like) the *very* lotus.' Comparisons or metaphors exhibiting the similitude to divers objects are

frequently to be met with in our books; and they conduce much to elevate the subject. We take an example from the *Kusa Játaka.*

නාරකොඳ මුතුහාර හරගිර සදිසියස.

"His renown was like that of stars, jasmine, pearls, and mount Kailása."

Here the poet has selected *white* objects to convey the purity of that renown which it was his wish to exalt. If he had chosen other objects, as තඹර the *red lotus*, the entire beauty of the comparison would have been lost.

There is frequently to be met with in our books a species of metaphor called *prativastu*, which is the expression of two sentiments, without stating the resemblance between them. This is a trope very pleasing to the mind, "as men are more gratified at catching the resemblance for themselves, than at having it pointed to them."* *Subásita* abounds in metaphors of this kind, and we shall select the following as an example:—

නැනමද පුතුන් සියයක් ලදුවත්නිස රැ
ගුන නැත බෙලෙන් යුතු පුතුමය ඉතාග රැ
එක පුන් සඳින් දුරුවෙයි ලොවගන අඳු රැ
නෙකතරු රැසින් එලසට නොම වේයදු රැ

"Better one son wise and good; there is no benefit even by a hundred of fools. One moon dispels the thick darkness of this world; it is not dispersed even by hosts of stars."

Analogical metaphors and comparisons are to be found in the Siṇhalese, by the comparates being compounded as in the English word, "table-land." In the language of Dr. Whately

"They are both the more frequent and the more striking. They are the more frequent, because almost every object has such a multitude of relations, of different kinds to many other objects; and they are the more striking, because (as Dr. A. Smith has well remarked,)

---

* Dr. Whately on Rhetoric, p. 267.

the more remote and unlike in themselves any two objects are, the more is the mind impressed and gratified by the perception of some point in which they agree,"*

*e.g.*, ගල්හිත, 'stone-heart,' for 'stone like heart,' යක් මුන, 'devil-face,' for 'devil-like face,' ugly countenance, ගොන් මිනිහා; 'bullock-man,' for 'bullock-like-man,' &c., 'a stupid.' I shall adduce an example from the *Kávyasékhara*.

තින් ගන දුරම්තුරු විනෙදන කුමුදු තිසයු රු
ගුන මිනිමහසුරු වදිම්මුනිදුතු මන්තිලෝගු රු

"I bow unto his supreme intelligence, the teacher of the three worlds, an ocean for gems-virtues, a moon for lily-faithful men, and a sun for thick darkness unbelief."

It is to be observed, that compound metaphors, as in the above stanza, where the resemblance between certain objects is implied but not expressed, are very frequent in the Siŋhalese. In the example before us, the poet compares the virtues of Buddha to the inestimable gems produced in the ocean; the religious comfort which the followers of that sage derive from his Sermons to the influence which (it is supposed) the moon has over the lily,† his power to convert heretics, to the light of the sun which dispels darkness.

Where direct resemblance between two objects is expressed the Siŋhalese use එව් or නැමති, equivalent to the English words 'like,' 'of,' as in 'moon-like brilliancy,' සඳෙව් (*i.e.*, සඳ එව් අඑ,) 'light of reason,' නුවන නැමැති ආලෝකය. Frequently, too, the comparates are used together, without a sign of comparison: in which case it must be observed, that an object is merely illustrated by the form of another object. Thus we speak of කන්වැල, 'ear creeper,' කඩුපත,

* Dr. Whately on Rhetoric, pp. 265, 266.

† It is to be remarked that if *tambara* were substitued for *kumudu* the metaphor would prove defective, inasmuch as the former is a sun flower: between it and the moon there would therefore be no relationship.

'sword leaf.' This metaphor may be easily understood by an Englishman by removing the order of the above words to suit the idiom of the English: 'creeper ear,' or 'creeping ear,' 'leaf sword' or 'leafy sword.'

Orientalists give *irony* under the head of metaphor; and it is defined to be a speech, conveying a meaning different to the plain signification of the words. As for instance, if a person whom I bade carry a pot of water to the next room, broke it on his way, and I then exclaimed යස හපන් කමක් කරපි. 'He has done a very clever job!' the language would be irony.

Many of the tropes in use amongst Western nations are also to be found in the Siṇhalese. All the several sorts of *synecdoche*, of which Dr. Campbell treats in his "Philosophy of Rhetoric," p. 431, (*i.e.*, the genus for the species, the whole for a part, and the matter for the instrument or thing made of it) are of frequent occurrence in our language. Of the genus for the species; when we say ගස් මදින්ට ගියා 'He went to break (extract toddy from) trees;' by 'trees' we mean *palm trees*, a species. When we say රෙද්ද ඉරුනා 'the cloth was torn,' or අරුව බල්ලෙක් කාපි 'he was bitten by a dog,' we express the whole for a part. When it is said, ඒ රන් දහස දෙමින් ඔහුට, 'by giving him the thousand pieces of gold,' money is meant, or *masuran*.

In a language like the Siṇhalese, which abounds with so many delicate expressions to convey various degrees of respect according to circumstances, we can scarcely fail to notice, what is commonly denominated *euphemism*. As an example of this decency in expression, Dr. Campbell has given Martha's answer to our Saviour, when he directed the removal of the stone over Lazarus's sepulchre. "Lord, by this time he *smelleth*, for he hath been dead four days."* In the Siṇhalese version, which has closely followed the

* St. John xi. 39.

English expression, the original word 'smelleth' is rendered '*stinketh*,' සවාමිනි ඔහු මරනට පැමිනි හතරදවසක්වෙනබැවින් දැනට ගඳඇතයි කීවාය; but it must be observed, that the Siṇhalese never use the word ගඳ 'stink' in a company, but invariably convey the idea by calling it 'smell.' I must not omit, however, to observe here, that even the word ගඳ, although it has undergone a change in its use by its being applied at present to mean only 'stink,' originally meant 'smell' or 'scent.' As in the following passage in *Amáwatura* :—

දෙව්මිනිස්සු ගඳින් මලින්පුදාමහපුෂීයමෙහි තාහා සමකෙනෙකුදු නැතයි කී·

"Gods and men having offered scents, and flowers, said 'O great man! there is no one here equal to thee."

Other instances are not wanting, where to a vivid exhibition of what may appear as delicate, offensive, or indecent, the Siṇhalese use a turn of expression different from that which they otherwise use.

Following the order in which Dr. Campbell has treated of tropes, I shall here allude to the *catachresis*. An example of the use of words in a signification that is very near their ordinary meaning, may be furnished from the following portion of a dialogue to which I listened with pleasure; කොයිද බාන් උඹෙ රාල? Where, I say, is your husband? මම දන්නේ නෑ ඔන්න ඔහේ තිබුනි 'I don't know, *it was* some where there.' The force and beauty of the Siṇhalese expression are entirely lost in the translation. We only use තිබුනා when we refer to an inanimate object. When animate objects are spoken of උන්නා ('was') is the verb employed. In the example before us තිබුනා occurs where උන්නා should have been used. Although this is an impropriety of language (as doubtless in the passage in the Cotta version of the Bible, උදය මගේ දරුවාට කිරිදෙන්නට මම නැගිට්ටාම ඔහු මැරීතිබුනාය, I Kings iii. 21 *), yet when we wish to express contempt at the

* See Sidath Sangarawa, p. cclvi.

mode in which a man lives, or at the inactivity or laziness with which he passes his days; such language contributes either to ornament or strength. In the sentence කොයිද අර දිගා 'Where is that high one'; the word දිගා is used for උස් එකා 'tall fellow.' Here the tallness of the person is spoken of either in a contemptuous manner; or in amazement at his prodigious height.

There is no language in the world in which there is not from time to time a change in the signification of terms, or in which words are not deflected from their original sense. In the Siṇhalese this is peculiarly the case: and we can easily illustrate the second species of *catachresis* which Dr. Campbell, (pp. 436, 437,) defines to be.

"When words which, from their etymology appear to be applicable solely to one kind of thing, come afterwards to be applied to another, which is nearly related in its nature or design, but with which, nevertheless, the analysis of the word will not accord."

The word බත්, for instance, was originally used for "food," and it is now generally understood to mean boiled rice; කුඩු meant powder, but it is now usually understood as a designation for 'rice powder.'

*(To be continued.)*

# SCRIPTURE BOTANY OF CEYLON.

By William Ferguson, Esq.

The following familiar observations on some of the Plants mentioned in the Bible, and which are indigenous to, or are related to genera and species growing or known in Ceylon, form portion of a lecture delivered by me last year to the Young Men's Christian Association in Colombo.

During my inquiries into this subject, I made free use of all the authorities at my command, and therefore, to those who have read one of the various works on the Botany of the Bible, it is not likely that much original matter will be found in these observations, further than the identification of the plants with our Ceylon ones.

## Cinnamon and Cassia.

(කුරුඳු *kuruñdu* Siŋ. *Cinnamomum Zeylanicum.* Nees.)

The word Cinnamon occurs four times in the Bible, first about 1,600 years before the Christian era, in Exodus xxx. ver. 23, where it is enumerated as amongst the ingredients employed in the preparation of the holy anointing oil. "Take thou also unto thee principal spices, of pure myrrh five hundred shekels, and of sweet cinnamon half so much." Again "I have perfumed my bed with myrrh, aloes, and cinnamon. (Prov. vii. 17.) "Spikenard and saffron, callamus and cinnamon, with all trees of frankincense." (Cant. iv. 14.) While in Revelation, among the merchandise of Babylon, we have enumerated "Cinnamon and odours, and ointments and frankincense." (Rev. xviii. 13.)

Besides the real Cinnamon here undoubtedly referred to, (the *Cinnamomum Zeylanicum*), we have four other species indigenous to the Island, one of which, lately discovered by the present Director of the Botanic Gardens, has the perfume of the Lemon Grass so well known in Ceylon. The plant discovered by Mr. Thwaites, bears a name signifying that it has this resemblance.

The references in the Bible to this famous spice have called forth the powers of investigation of several authors, who have thrown considerable light on the subject and on the countries supposed to have produced the Cinnamon of the Bible.

I need not enter into details respecting the Cinnamon plant, for which our Island is renowned above all other places on the face of the earth.

I cannot say much about "the Spicy breezes," perceived by voyagers off the coast and described by Poets, but there is no doubt that after a shower of rain the air in the Cinnamon Gardens is perfumed with the pleasant odour of various flowers around. The odour of the Cinnamon flower is neither powerful nor peculiar.

I had the pleasure, in 1858, of examining in the British Museum specimens of the Cinnamon plant collected by Paul Hermann in this Island about 200 years ago, and which formed the origin of the *Laurus Cinnamomum* and *L. Cassia* of *Linnæus*, the latter of which did not differ from the former excepting by the narrowness of its leaves, and they seemed to have been made so by the free use of a pair of scissors.

The Cassia of commerce is the produce of several species of Cinnamon, as well as of the real Cinnamon tree, the inferior kinds from Ceylon having been sold as Cassia.

Milton makes several allusions to Cassia—

> "——— and now is come
> Into the blissful field through groves of myrrh
> And flowery odours, *cassia*, nard and balm."
>
> "*Paradise Lost*," *Book 5.*

You all remember the hackneyed allusion to the "spicy gales of Araby the blest," founded on the early idea that the Cinnamon which the Arabs carried to the shores of the Mediterranean was the produce of Arabia.

Another Poet writes:—

"There eternal summer dwells,
And west winds with musky wing
About the cedar'd alleys fling
*Nard* and *Cassia's* balmy smells."

"Sleep in thy peace that bed of spice,
And makes this place all paradise;
Let balm and cassia send their scent,
From out thy maiden monument."

*Herrick, "Dirge of Jephtha."*

Notwithstanding questions raised as to Cinnamon being indigenous to Ceylon, there can be no doubt of the fact, and very little as to Ceylon being the source whence the Arabs derived the Cinnamon which the caravans took down to Egypt and Palestine.

## Olive.

"The dove came into him in the evening, and lo, in her mouth was an olive leaf plucked off; so Noah knew that the waters were abated from off the face of the earth." (Gen. viii. 11.)

"The trees went forth on a time to anoint a king over them; and they said unto the olive tree, Reign thou over us. But the olive tree said unto them; should I leave my fatness, wherewith by me they honour God and man, and go to be promoted over the trees." (Judges ix. 8, 9.)

This is one of the earliest and oftenest mentioned trees in the Bible, and is by universal consent admitted to be the same as the one now known by that name. It is indigenous to Syria, to the South of Europe, as well as to parts of Africa.

Olive oil and Olives are extensive articles of commerce.

The fragrant olive of China with which the Chinese are said to flavor their tea, was introduced to Ceylon many years ago, and we have two other species of Olive indigenous to the Island, but neither of them must be confounded with the වෙරළු *veraḷu* or *illupie* trees, which belong to two distinct Natural Orders, and both considerably separated from the Olive.

I suggest this precaution, from the fact that some of my friends of the American Mission at Jaffna are in the habit of alluding to the *illupei*, which is one of the most valuable trees of the Northern Peninsula, as the Ceylon Olive tree, and because in this quarter Europeans are in the habit of calling the *veraḷu* the Olive. The fruits of this latter tree do indeed bear such an outward resemblance to the Olive, that the genus to which it belongs, has in consequence of this resemblance, been called *Elæocarpus*. The nuts of an allied species are those known to you all as the "Brahmin beads," which, mounted as bracelets, are very commonly worn by ladies.

## Mustard.

"The Kingdom of Heaven is like a grain of mustard seed, which a man took, and sowed in a field; which indeed is the least of all seeds; but when it is grown, it is the greatest among herbs, and becometh a tree, so that the birds of the air come and lodge in the branches thereof." (Matt. xiii. 31, 32.)

Perhaps the plant here translated Mustard, has called forth as much research and learned disquisition as any one named in the Bible. Some writers attempt to prove that because a species of the plant which produces Mustard (*Sinapis*) grows in Palestine to a considerable size, no other plant could have been meant; but the late Dr. Royle produced incontrovertible evidence to prove that the tree here meant is the *Salvadora Persica* of Botanists, a small tree, native of the hot dry parts

of India, and of Persia, Arabia, and Ceylon. In a note to an article on the Flora of Ceylon, contributed by the late Dr. Gardener to the Appendix to Mr. Lee's translation of "Ribeyro's History of Ceylon," it is mentioned, that he considered himself the first to discover this plant in our Island; but it seems, from a notice in Ainslie's "Materia Indica," to have been known as a native of Ceylon many years previously. It is a common plant on the small Islands in the vicinity of Jaffna, and some specimens which I saw several years ago growing on what is called "Small-pox Island," close to Jaffnapatam, bore a general resemblance to the weeping Ash tree. Its seeds taste a good deal like Garden Cresses, and its bark, which is acrid and raises blisters upon the skin, (in this resembling the *Plumbago Zeylanica*,) is used as medicine. There are two species of the genus indigenous to Ceylon.

## SYCAMORE.

"Over the olive trees and the sycamore trees that were in the low plains was Baal-hanan the Gederite." (I Chron. xxvii. 28.)

The tree here and elsewhere referred to as the Sycamore *(Ficus sycamorus)*, is admitted to have been a species of Fig tree, the fruit of which is like the common Fig, and the leaves like those of the Mulberry: hence the name.

We have no less than 22 species of the genus to which the Sycamore belongs, and one, the ගං අට්ටික්කා *gaṇ aṭṭikka* (*Ficus glomeratus*), bears a great resemblance to the tree here referred to. Some of the species are creeping plants, covering stones and rocks, and the stems of forest trees, somewhat after the fashion of the English Ivy; while others are amongst the giants of the forest. The famous *Banyan* belongs to them, and when at Jaffṇa, I measured one in the vicinity, which, with its hundreds of depending shoots, covered an acre and 1-12th of ground. This is the tree to which Milton alludes in Paradise Lost, as the fig tree whose leaves formed the first

clothing of the primeval pair. The *Bó-gaha* also belongs to the same genus, and I was assured some time ago by Sir J. E. Tennent, that the famous Bó-tree of Anuradhapura, (the description of the introduction of which into Ceylon occupies a chapter of the "Maháwaṇsa," (is the oldest historical tree on record. Sir Emerson believes there is evidence to prove that the tree now growing there is the identical one referred to in the "Maháwaṇsa." Those who have read the gorgeous language made use of in the "Maháwaṇsa,") describing the boat, &c., in which the Bó-branch was carried, cannot but have been struck with the similarity of language and imagery to those used by Shakspeare in reference to the mode in which Cleopatra paid her first visit to Anthony.

Though the wood of the Sycamore tree is soft and coarse, it is believed to have formed the coffins of some of the Mummies found in Egypt.

## Palm.

"The righteous shall flourish like the Palm tree." (Psalm xcii. 12.)

"And they came to Elim, where were twelve wells of water, and threescore and ten palm trees: and they encamped there by the waters." (Exod. xv. 27.)

The Palm tree here and elsewhere so often mentioned in the Bible, is undoubtedly the Date Palm (*Phœnix dactylifera*), single specimens of which may be seen growing in several parts of Ceylon. It is the රට ඉඳි *raṭa indi* of the Siṇhalese; and a solitary tree which grows at Jaffna, vies in stature with any which I saw growing in Egypt. The two indigenous Date trees of our Island, (from the branches and leaflets of which Tats and Basket work are formed,) will give a very good idea, on a small scale, of the Bible date tree, and the manner in which it produces its fruit. Dates are imported into England from Barbary and Egypt, and into Ceylon from the Persian Gulf and Arabia.

There are perhaps a hundred varieties of the Date tree cultivated, and those who have eaten of the beautiful, cleanly preserved dates sent to England, cannot but have observed the vast difference between them, and the two kinds we get here. One of these comes in earthern pots, and is of a dark shining appearance, and rather pleasant to eat; but the other comes in messes, and not freer of extraneous matter than oriental sugar, which is never known to diminish in weight, however often it is spilled before it gets to the Bazaar.

The ancient Tadmor or Palmyra (built by Solomon and destroyed by the Roman Emperor Aurelian,) was so named from the number of the Date Palms which grew around it. To the natives of portions of Africa and Arabia, it is of greater consequence than the Coconut or Palmyra palms are to the natives of Ceylon; and hence, in former times, during a war with these countries, the greatest curse that could be inflicted upon them was to cut down the stameniferous trees, which were very few in proportion to the fruit-bearings ones, and so prevent the usual crop of dates. In consequence of this barbarous practice, attempts were made to secure a supply of the fertilizing pollen from the male trees, and it is stated that this, secured in earthen vessels, has been known to retain its fertilizing powers for 19 years.

It is no doubt in reference to the barbarous practice of cutting down such trees, that the following law was issued in Deut. xx. 19:—

"Thou shalt not cut down the trees thereof by forcing an axe against them: for thou mayest eat of them, and thou shalt not cut them down, for the tree of the field is man's life."

In reference to this passage, the late Mr. Roberts, in his "Illustrations of the Scriptures," wrote:—

"Can it be a matter of surprise, that the Orientals have a great aversion to cut down any tree which bears fruit, when it is known that they principally live on vegetable production? Ask a man to

cut down a coconut or palmirah tree, and he will say (except when in want, or to oblige a great person) 'What! destroy that which gives me food? from which I have thatch for my house to defend me from the sun and the rain; which gives me oil for my lamp, a ladle for my kitchen, and charcoal for my fire; from which I have sugar for my board, baskets for my fruits, a bucket for my well, a mat for my bed, a pouch for my betel leaf, leaves for my books, a fence for my yard and a broom for my house? Destroy such a tree! Go to some needy wretch who has pledged his last jewel, and who is anxious to eat his last meal?"

I can imagine how refreshing it must have been for the children of Israel to have found so many Palm trees at Elim and elsewhere in their wanderings, and appreciate the various allusions to this useful tree in a country, many parts of which have a most barren aspect; but for my own part, I confess that the Date trees I saw growing in Egypt did not convey to mind any great idea of elegance or beauty.

Passing from Cairo to Suez, and down the Red Sea, in sight of Arabia and Africa, the scenes of the wanderings of the Israelites, there is scarcely any vegetation to be seen; and the few specimens I picked up in the Desert of Sahara were leafless wiry looking plants.

### Camphire.

මරිතොඬි *Maritoṇḍi* (Tamil and Siṇ.) *(Lawsonia alba.* Lam.*)*

Camphire (Kopher or Copher) occurs twice in the Bible,—

"My beloved is unto me as a cluster of camphire in the vineyards of Engedi." (Song of Sol. iv. 14.)

"Thy plants are an orchard of pomegranates, with pleasant fruits, camphire with spikenard." (*Ibid.* iv. 13.)

Most writers agree that this refers to the *henna* plant so common in our gardens here. There is no Siṇhalese name for the plant, but they have adopted the Tamil one, *mari-toṇḍi*; by some it is called "the Country Mignonette." It

has been compared with the common Privet, and those who recollect the privet fences so common in England, will see the resemblance. I never saw it growing out of the gardens in this part of the Island, but I am aware it is indigenous to the Northern end, where I have seen it grow in rich profusion for miles along the shores of the salt lake called Kaḷḷaveli in the Peninsula of Jaffna, and for my own part I consider it one of the most pleasantly fragrant plants we possess.

It has been proved that the nails of the Mummies, which may have lain for thousands of years, were stained of an iron rust colour from a dye made from the leaves of the *henna*, and the same practice prevails in Ceylon, and other Oriental countries to this day. The plant is found commonly from Morocco, through Palestine, Egypt, Arabia, Persia, and India, on to the Malay Peninsula, and the Islands of the Indian Archipelago, and is used as a dye by the people of all these countries, in one form or another.

It is most likely that in Egypt the parctice of dyeing the eye-brows, nails of the hands, and the soles of the feet, with a preparation of *henna*, has been very generally practised for the last two or three thousand years. The Persians and Arabs dye the manes and tails of their horses with it, and here we may see several of the Malays and Moormen whose nails and eye-brows have similarly dyed.

## Fig.

This is the first tree specially named in the Bible, where our parents are described as sewing fig leaves together, to make themselves aprons. (Gen. iii. 7.) The Fig tree is enumerated (Deut. viii. 8,) as one of the valuable products of Palestine, a land of Wheat and Barley, and Vines, and Fig trees, and Pomegranates. The spies who were sent from the Wilderness of Paran brought back from the brook of Eschol clusters of Grapes, Pomegranates, and Figs. The Fig tree is

referred to as one of the signs of prosperity (I Kings xviii. 25.) "And Judah and Israel dwelt safely, every man under his vine and under his fig tree." And its failure is noted as a sign of affliction (Ps. cv. 33) : He smote their fig trees, and broke the trees of their coasts."

All writers who have studied the subject, are agreed that the Fig tree so often named in the Bible is the common Fig *(Ficus carica)*, and which is pretty commonly grown in Ceylon; where most of the fruits, however, fall off before they are matured, from want of knowledge amongst the cultivators, of some facts connected with their cultivation, I believe. The fruit of this, and all the other species of Fig, consists of the hollow succulent receptacle, or general peduncle, enclosing numerous flowers ; but from the fact that the Siṇhalese are not in the habit of investigating such matters, they assert that the Fig tree has no flowers, and in reference to this, and the confidence placed in the truthfulness of woman by the Siṇhalese, Major Forbes gave the following versified translation of some lines uttered in his Court :—

"I've seen the Udumbera * tree in flower,
White plumage on the crow,
And fishes' footsteps o'er the deep
Have traced thro' ebb and flow.
If man it is who thus asserts,
You may his word believe ;
But if from woman's lips—distrust,
She speaks but to deceive."

## Cedar.

I do not believe we have a single representative in Ceylon of the natural order of Pines to which the Cedar tree belongs. The Casuarinas, common about Colombo, bear a great resemblance to some of the Fir tribe, but that is all.

---

* The Sanscrit name of the Banyan.

In reference to Solomon as a Botanist, I may just mention, that a genus of small plants has been dedicated to his memory in these words :—

"Salamonia, in honour of Solomon, king of the Jews, the first botanist, flourished about 1,000 years before Christ." We have two species of this genus in Ceylon, one of which found in the bogs near Colombo, and elsewhere, is a plant from two to three inches in height, often much branched, and having long spikes of rose-colored flowers.

### Almond, Pistachia, Hazel.

"Israel said unto his sons, take of the best fruits in the land in your vessels, and carry down the man a present, a little balm, and a little honey, spices and myrrh, nuts and almonds." (Gen. xliii. 11.)

It is admitted, that the plant now known as the Almond tree is indentical with the one of the Bible. It is a native of Syria and Palestine, and although I saw some plants of it growing in the Pasha's gardens both at Alexandria and Cairo, it is not likely that it grew in Egypt at the time referred to; hence the reason for its being included in Jacob's present. You will all see the coincidence between this passage and the habit of the Siṇhalese of bringing presents of fruits to those from whom they expect favors. It is common to all orientals.

The Peach, which has been grown on the mountains of Ceylon for many years past, is a species of the same genus to which the Almond tree belongs, but you must not confound the Almond with what is known here as the country Almond (කොට්ටම්බ, *koṭṭamba*), which belongs to a distinct natural order.

Some trees which were in flower, but not in leaf, at Gibraltar in January 1858, were so profusely covered with rose-colored flowers, that they were conspicuously seen a long way out at sea. The Almond is one of that important

family which, according to the testimony of Geologists, seems to have been created about the same time with man.

The Nuts above named, in connection with the Almond, have, by various commentators, been translated "Pine-nuts," "dates," or "walnuts," but other writers think that the "Pistachio nuts," so much in request in the East, and imported into India from Afghanistan, are meant.

The word rendered Hazel in Gen. xxx. 37, should be translated Almond.

### Pomegranate.

(දෙළුම්, *delun* Siṇhalese ; *Punica granatum.* Linn.)

"Beneath upon the hem of it (the robe) thou shalt make pomegranates of blue, and of purple, and of scarlet, round about the hem thereof, and bells of gold between them round about, a golden bell and a pomegranate, a golden bell and a pomegranate upon the hem of the robe round about." (Exod. xxxiii. 33, 34.)

There is very frequent allusion to this tree or fruit in the Bible, especially in the gorgeously poetical Song of Solomon, where it is spoken of as follows—"Thy plants are an orchard of pomegranates, with pleasant fruits, camphire and spikenard." (iv. 13.) "As a piece of a pomegranate are thy temples within thy locks." (vi. 7.) "I went down into the garden of nuts to see the fruits of the valley, and to see whether the vine flourished, and the pomegranates budded." (vi. 11.) (and so in vii. 12.) "I would cause thee to drink spiced wine of the juice of my pomegranate." (viii. 2.) It is common and well-known here, though not indigenous. The Siṇhalese name of the plant is *delun.*

In consequence of the very frequent mention of the pomegranate fruit, in books of Eastern travel, I expected to find a very different fruit from the almost tasteless, small, and insipid fruit commonly seen in the bazaars here ; but I am

now convinced, that when properly cultivated, the pomegranate is not only a pleasant, but very refreshing fruit, even to European taste.

When staying with Mr. Henry Rudd for some days, a few years ago, at Kadugannáwa, I remember he received from his cousin some cultivated pomegranates, each as large as a child's head, and they were certainly a delicious fruit, equalling, I should think, those which are said to be sent to Bombay from Muscat and Persia. The natives are so fond of them, and have such a high idea of their virtues, that to procure them for a patient suffering from fever or small-pox, they have been known to give from 1*s.* 6*d.* to 2*s.* for a single fruit.

The rind of the fruit is used by European and Native doctors as a powerful astringent, and is supposed to be the principal ingredient used in tanning Morocco leather.

### Tares.

"The Kingdom of heaven is likened unto a man which sowed good seed in his field, but while men slept, his enemy came and sowed tares among the wheat." (Matt. xiii. 24, 25.)

The tares here referred to are supposed to be the Darnel grass of Europe, the *Lolium tremulentum*, a tall grass often found in corn fields resembling the wheat until both are in ear, and remarkable as one of the very few of the large family of grasses possessed of deleterious properties.

One of the greatest pests of the Rice grower of Ceylon is a plant called in Sinhalese කිරිඳිමානා *kirindi-máná*, known to us as "Job's Tears" *(Coix lachryma)* and it bears such a close resmblance to the Rice plant, that I believe they are undistinguishable till they bear seed. The seeds of this plant are of a pale grey colour and covered by a flinty shining coat. They are extensively used for bracelets, and I was told by a fellow passenger from St. Helena to England, that Lady Ross, tne widow of a former Governor of that

Island, made and sold bracelets of these and other seeds sufficient to build a small church, for which she liberally gave the proceeds.

### WILLOW.

After the Feast of Tabernacles, the children of Israel were required to keep a feast of seven days, and on the first day they were directed to take "boughs of goodly trees, branches of palm trees, and the boughs of thick trees, and willows of the brook; (Lev. xxiii. 40.) and they were to rejoice before the Lord their God seven days. Job, when talking of Behemoth, said "The shady trees cover him with their shadow; the willows of the brook compass him about." (Job xl. 22.)

How very touchingly does the Psalmist describe the feelings of the captive children of Israel, when it was demanded of them to sing in a strange land, one of the songs of Zion, "By the rivers of Babylon, there we sat down, yea, we wept, when we remembered Zion. We hanged our harps upon the willows in the midst thereof." (Psalm cxxxvii. 1, 2.)

"And that which they have laid up, shall they carry away to the brook of the willows." (Is. xv. 7.)

And in another place Isaiah speaks of the Willows as fit emblems for the children of godly parents.

"And they shall spring up as among the grass as willows by the water courses." (Is. xliv. 4.)

There is no species of Willow indigenous to Ceylon, but upwards of thirty years ago, the very species here referred to, the Weeping Willow (*Salix Babylonica*,) was introduced, and now there are growing in front of Mr. Darley's house, plants of the same species, said to have been procured from the famous tree which overhung the tomb of Napoleon in the Island of St. Helena. Several now in Ceylon have doubtless seen this tree, and others of great beauty, when

calling at that Island. We are all familiar with the Willow pattern dishes, the design of which was got from China ; now the Willow there represented, as well as in many of the Chinese paintings of landscapes, is this very species, for it is indigenous to, and very common in, China. In thus glancing at the familiar facts connected with the Willow, how strange are the associations produced in our minds. We first think of the captive Israelites, who because they cannot sing in a strange land, hang their harps upon the Willows ; then we are carried by thought to the tomb in the far off Ocean Isle, where lately lay the remains of one of the greatest wholesale murderers that ever cursed this earth ; and lastly we are borne along to a people (the Chinese) who seem generally to be much in the same state as they were 2000 or 3000 years ago, but who are fast being brought face to face with the civilization of modern Europe,—the civilization of tribes unheard of in ancient Babylon, and still styled " barbarians " by those who arrogate to themselves the title of " Celestials."

### Hyssop.

" He (Solomon) spoke of trees, from the cedar tree that is in Lebanon, even unto the hyssop that springeth out of the wall." (I Kings iv. 33.)

" Also, when they shall be afraid of that which is high, and fears shall be in the way, and the almond tree shall flourish, and the grasshopper shall be a burden, and *desire* shall fail : because man goeth to his long home, and the mourners go about the streets." (Eccles. xii. 5.)

A great deal of learned discussion has taken place in reference to the *Esoph* of the old, and the *Hyssopus* of the New Testament, translated in all cases "Hyssop"; and instead of its being the plant well known to most of us as the common Hyssop, it is now generally believed that species of Caper (*Capparis spinosa* or *C. Egyptiaca*) was the plant meant, and indeed is the best suited for the several requirements of the

one so frequently referred to in the Bible. But while there may be a reasonable doubt in our minds on the subject of this plant, perhaps it may be new for some of us to learn that the word "*desire*," in the passage I have quoted from Ecclesiastes, is admitted to indicate a plant, and no other than the plant which chiefly furnishes the Capers of commerce (*C. spinosa*); and which, perhaps, some of us may not be aware of, are the unexpanded flower-buds of this plant. The genus to which the Caper bush belongs, is very widely distributed over the earth, and species answering the requirements of the texts referring to it, were growing in the several countries named in the Bible in connection with it. We have no less than twelve species of the Caper plant indigenous to the Island, some of which, when in flower, festoon the forest trees, and exhibit as rich a floral display as any plant in the Island. Their flowers are in general very conspicuous, and beginning with a fine rose-colored one, which was lately in flower in Colombo, are of various sizes and colors; one, in the jungles of the interior, displaying a profusion of snowy white flowers fully two inches across the petals. There was a very fine one some years ago at Elie House, which has since been cut down. It is a gigantic thorny climber, and known to the Siŋhalese as වෙලුන්ගිරිය, *vélangiriya*. It has the flowers so arranged in rows on the stems, that when the uppermost expands and falls off, the next in succession opens in its turn.

## Mallow.

This word occurs only once in the Bible, where Job speaks of those, "who cut up mallows by the bushes, and juniper roots for their meat." (Job xxx. 4.)

There has been a great deal of discussion on the subject of the plant here translated Mallow, and it is shewn that the original word may stand for several plants which grow in the lands of the Bible, as well as for the Mallow, some of which indigenous to Ceylon, and of others we have representatives

One of the supposed plants, the "Jews' Mallow," (*Chorchorus olitorius)*, is indigenous here ; but in passing from Alexandria to Cairo in Egypt lately, and keeping my eyes open, particularly with reference to such subjects, I saw several plots of ground planted with the real Mallow, and cultivated evidently with great care, while I did not detect any of "the Jews' Mallow" so cultivated.

There is no species of the genus to which the Mallow belongs indigenous here,* but those gorgeous flowering Holyhocks now so common in our gardens, and the මහඅනෝදා *maha-anódá* of the Siṇhalese (*Abutilon Indicum)* so very commonly used by the Natives as a Medicine, are no unfit representatives of the Mallow. Another of the plants which the original word in Job may indicate, is the *Salsola Indica*, and which, according to the testimony of the late Dr. Roxburgh, "saved the lives of many thousands of the poor natives of India during the famine of 1791-2-3 ; for while the plant lasted, most of the poorer classes who lived near the sea had little else to eat." In years when the Rice crop fails in the Island of Delft, in the Northern Province, the natives have recourse to the roots of a small grass-like plant called *silinti* in Tamil, and *kalánduru* by the Siṇhalese (*Cyperus geminatus*).

### Bramble.

"Then said all the trees unto the bramble, Come thou and reign over us. And the bramble said unto the trees, If in truth ye anoint me king over you, then come and put your trust in my shadow, and if not, let fire come out of the bramble and devour the cedars of Lebanon." (Judges ix. 14, 15.)

We have no less than seven species of Bramble indigenous

* Since the above was written, I paid more attention to the identification of a common road-side plant in Colombo, which I find to be a true Mallow, and I think *M. tomentosa*, Linn.

to the interior of Ceylon, and most troublesome plants they are to the Surveyor who has to cut boundaries through them; to the intending Planter who explores the forest, or the huntsman who pierces their recesses in pursuit of game. They are known to the Siņhalese, but it appears that the plant translated Bramble, as well as the other plants called Thorns, Thistles, and Briars, are involved in obscurity.

The Bramble, as well as the plant used to make the "crown of thorns" for our Saviour, is supposed to be *Zizyphus spina Christi*, a plant common in the East. The *Zizyphus paliurus*, a plant of Palestine, is supposed to be the Briar so often referred to in Isaiah—"Ye shall know them by their fruits. Do men gather grapes of thorns, or figs of thistles?" (Matt. vii. 16.) A species, closely allied to one of the plants supposed to be referred to here, is common in dry sandy ground near Colombo, it is the සෙඹුනෙරෙන්චි, *sembu-nerenchi* (*Tribulus terrestris*) of the Siņhalese. It is a small plant, spreads flat on the ground, and its thorny fruits often annoy the barefooted natives.

Of the genus *Zizyphus* we have five species indigenous to Ceylon. The මසන්, *masan* or *ilantai* is well known to most of us as producing a fruit, which is freely eaten and sold in the bazaars here.

Many of us have read of a species of fruit eaten by the ancient Lotophagi; which, when once tasted, it was fabled, made those who ate of it lose the love of their country. I saw several of the trees producing these fruits in the gardens at Alexandria, and they bore a very great resemblance to the *masan* tree and fruits.

TAMARISK.

"Now Saul abode in Gibeah under a *tree* in Ramah, having his spear in his hand, and all his servants were standing about him." (Sam. xxii. 6.)

Most authors are agreed that the word translated "tree" in the above passage, as well as "grove" and "tree" in Gen. xxi. 33, and xxxi. 13, should have been "tamarisk" or "tamarisk-tree."

There is one species of the Tamarisk indigenous to Ceylon, but while the tree of the Bible is spoken of as affording shade, and a refreshing sight to the weary traveller of the desert and other places, our Ceylon tamarisk is remarkable for growing generally in water, "and for a poor leafless appearance." Such, at least, is the peculiarity of those I saw growing in the marshes near Jaffna. It is remarked, that "On the extreme part of the desert of Shur, the scene where Hagar wandered with her outcast child, the stunted bushes of the Tamarisk grow in abundance, and some travellers have remarked, that it was probably under one of these bushes that the desponding mother cast the child of her blighted hope." With reference to shade, I may mention, that the natives of Jaffna have particular objection to rest or to build their huts under the shade of certain trees, while the shade of the Tamarind is chosen by them of all others as being the coolest and healthiest. The Tamarind, however, bears no resemblance, except in name, to the Tamarisk.

There is rather a rare tree in this part of Ceylon, being one of those which the natives call උගුරැස්ස *ugureṣsa*, (*Xanthoxylon Rhetsa*), and the seeds of which it is possible the Egyptians used in embalming. Under the shade of this tree, the "hill people of India assemble to examine and determine their matters of public concern," at meetings likely similar to the *gaṇsabhá* of the Siŋhalese.

There is a fine specimen of this latter tree at the village of Kanatta, near Colombo.

## Rose.

"The wilderness and the solitary place shall be glad for them; and the desert shall rejoice, and blossom as the rose." (Isa. xxxv. 1.) "The interesting comparison in the above

verse, and the no less important one in which our Lord is compared to the "Rose of Sharon," are the only two places in which the Rose is named in our English version." (Cant. ii. 1.)

While some writers have attempted to shew that the Rose here meant is the same with the one we all know by that name, others have, I think, shewn with greater reason that some other flower was meant, as "neither this nor any other rose adorns the plain of Sharon."

Some have attempted to prove that a bulbous plant was meant, and have fixed on a species of Narcissus (*N. tazetta*), while the late Dr. Royle supposed that the "Rose Bay," (*Nerium oleander*,) so well known in Ceylon, was the flower meant.

This is a common and admired plant of Palestine, and is found in all our gardens here; while on the roads from Jaffna to Chavakachcheri and to Point Pedro, Mr. Dyke has planted rows of one or two beautiful species.

Several varieties of the Rose grow in Ceylon; and in the interior, where whole fences are formed of them, they display a profusion of flowers, which can only be conceived by those who have seen them. Dr. Hooker stated that 20,000 flowers of roses at Ghazepore are required to make a rupee weight of the *attar*, which sells for £10.

The plant known to us as the "Rose of Jericho," is found in the deserts of Syria aud Egypt. The annual stems of this plant, when withered and dried, coil up like a ball, but expand on being put in water.

## Lily.

"I am the rose of Sharon, and the lily of the valleys." (Cant. ii. 1.) "Consider the lilies of the field, how they grow; they toil not, neither do they spin, and yet I say to you, that even Solomon in all his glory was not arrayed like one of those." (Matt. vi. 28, 29)

Many writers have translated the "lily" of the Canticles by Violet, Jessamine, and some other flowers, but the late Dr. Royle believed that the lily of the old and that of the New Testament are two distinct plants, "and thinks the former to be the lotus lily of the Nile." (*Nymphea lotus.*) This would account for the circumstance, that five times in the Canticles, in which the lily is mentioned, reference is made to "feeding among lilies," as the seeds, roots, and stalks of this flower were common articles of Egyptian diet; and this author considers, that the frequent reference to this flower in that part of the Scripture, may be owing to the circumstance that the Song of Solomon was written, as has been supposed, on the occasion of his marriage with an Egyptian princess.

Drs. Hooker and Thomson have lately identified the *N. lotus* of the Nile with all the varieties indigenous to or growing in India of the red water-lily, and hence the one growing in several parts of Ceylon is identical with the Lotus of the Nile. It is the ඇත්ඔළු, *ẹt-oḷu* of the Siṇhalese, and we have white and red varieties of it. It must not, however, be confounded with the sacred bean of India, which grows so profusely in the lake near Colombo, and which threatens to overrun the large sheet of water, as it did the tank between the Racquet Court and the Fort. It is the *Nelumbium speciosum* of Botanists.

It is on this latter plant that, according to ancient Hindoo ideas, the earth was supported; and it is somewhere recorded that one of the Gods assumed the shape of a boar, and dived down for the space of 3000 years to discover the source of its root, but in vain. There are beautiful allusions to the Lotus in Siṇhalese and Tamil poetry.

The Lily of the New Testament, and to which Solomon was compared, is supposed to be the Chalcedonian or Scarlet Martagon Lily, formerly called the "Lily of Byzantium," found from the Adriatic to the Levant, and which, with its scarlet

turban-like flowers, is indeed a most stately and striking object. As this Lily is in flower at the season of the year when the Sermon on the Mount is supposed to have been spoken, is indigenous in the very locality, and is conspicuous, even in the garden for its remarkable showy flowers, there can be little doubt that it is the plant alluded to by our Saviour.

Our magnificent, though common *Gloriosa superba*, and the cultivated Tuberose, are members of the family, and will give you no mean idea of the flower to which Solomon in all his glory was compared. I have seen it once stated, that the flower in question had some beautiful structure which bore out the comparison ; but this is not necessary.

### Lentils, Beans, Barley, Wheat, Millet.

"And Esau said to Jacob, Feed me, I pray the, with that same red pottage, for I am faint. Then Jacob gave Esau bread and pottage of lentils." (Gen. xxv. 30, 34.)

The mess of pottage for which Esau sold his birthright, is supposed to have been made from a small species of Pea, not unlike the green gram of the bazaars, and called උළුඳු, *uḷundu* and මුංඇට, *munẹṭa* by the Siṃhalese. The famous *Revelenta Arabica* is said to be the produce of lentils.

"Barzillai the Gileadite of Rogelim brought beds, and basons and earthen vessels and Wheat and Barley, and flour and parched corn, and Beans and Lentils and parched pulse." (2 Sam. xvii. 27, 28.)

Beans of several kinds and varieties are amongst the most common vegetables cultivated and sold in our Bazaars here. It would rejoice the heart of a bean-curry-loving Siṃhalese, however, to see the fields of a different kind of Bean, as cultivated in England.

When surveying in the forests of Sabaragamuwa, sixteen years ago, my coolies and myself came upon some Siṃhalese who lived under projecting stones, under one of which they

had a chatty full of beans and sweet potatoes boiling, and which we were very thankful to get from them, as we had eaten the last of our rice that morning.

I may remark, that though the very common habit of our cooks here to put a copper coin in beans, boiled for table, improves their color, it does not their wholesomeness.

Besides the foregoing and constant allusions to Wheat and Barley in the Bible, Moses described the ancient land of the Israelites as "a land of wheat and barley, and vines and fig trees, and pomegranates; a land of oil olive, and honey." (Deut. viii. 7, 8.) And in reference to Rye, it is said, "The wheat and rye were not smitten, for they were not grown up." (Exod. ix. 32.)

Wheat, Barley and Oats were cultivated in Uva many years ago, and several attempts have been made since to grow them at Nuwara Eliya, but not with any great success. Wheat and Barley are too well known to require a description of them. The wheat the bakers here use, comes from India; rice, *kurakkan*, &c., are members of the same natural order, and like the *Rosaceæ* elsewhere referred to, seem not to have been created before man. The expression, "Cast thy bread upon the waters, for thou shalt find it after many days," (Eccles. xi. 1) is supposed to refer to the Rice grown in the water.

"Take thou also unto thee wheat and barley, and beans, and lentils, and millet and fitches, and put them in one vessel and make thee bread thereof." (Ezek. iv. 9.)

This is the only passage in the Bible where the Millet is mentioned. We have no less than 46 species indigenous to Ceylon of the genus to which the millet belongs, besides the millet referred to, which is freely grown in Ceylon and is known as *menéri*.

The useful "Guinea Grass" belongs to the same genus.

We are aware that the limestone soil of Palestine is no longer a land teeming with corn and fruit, but a sad scene of desolation.

But this is because its people are "scattered." Let them but return to their goodly land, and use the streams for purposes of Irrigation, and all the ancient fertility of the land will be restored,—the Desert blossoming as the Rose.

## Jonah's Gourd.

"The Lord God prepared a gourd, and made it to come up over Jonah, that it might be a shadow over his head, to deliver him from his grief. So Jonah was exceeding glad of the gourd. But God prepared a worm when the morning rose the next day, and it smote the gourd that it withered." (Jonah iv. 6, 7.)

The Fathers not only pronounced excommunications against those who differed from them on the subject of the plant representing Jonah's Gourd, but came to actual blows amongst themselves on the subject.

It is now admitted to have been the Castor Oil plant so common in Ceylon, and of such rapid growth here and everywhere. At Paumban, and on the Coast of India, the castor oil is used as lamp oil, while in China it is said to be used in cooking.

The Castor Oil, and the Egyptian Cotton plants, were the most frequent shrubs I saw growing between Alexandria and Cairo. The cotton is cultivated in small patches, and at every Railway Station, the castor oil plant, with its bronze-colored, palmated leaves, seemed the most common plant of Egypt.

## Myrtle.

"Instead of the thorn shall come up the fir tree, and instead of the brier shall come up the myrtle tree, and it

shall be to the Lord for a name, for an everlasting sign that shall not be cut off." (Is. lv. 13.)

The common Myrtle is the plant here meant, and which is very generally grown in gardens in Ceylon. There is a species of the same genus indigenous to the mountains of the interior.

The Pomegranate elsewhere referred to, as well as the *jambu* or "Rose Apple,' belong to the same family of plants as the myrtle of the Bible.

Many of you are familiar with Byron's lines, beginning,—

> " Know ye the land where the cypress and myrtle
> Are emblems of deeds that are done in their clime.'

### Wild Gourd, Wild Vine.

" One went out in the field to gather herbs, and found a wild vine, and gathered thereof wild gourds his lapful and came and shred them into the pot of pottage : for they knew them not. So they poured out for the men to eat. And it came to pass as they were eating of the pottage, that they cried out and said, O thou man of God, there is death in the pot. And they could not eat thereof." ( 2 Kings iv. 39, 40.)

You are all familiar with the fact that the above passage refers to the sons of the prophets who were fed by Elisha at Gilgal, when there was a dearth in the land. It is supposed that the herbs which the person who went out wished to collect, were the fruits of the "Egg plant," in fact, the Brinjall so commonly eaten in Ceylon ; but that he mistook for it a plant of the Cucumber family, several of which produce poisonous fruits, and the one which is as likely as any other to have been the poisonous plant—the Colocynth plant—is common in the north of Ceylon, where it spreads on the ground, and displays a profusion of beautifully red-colored fruits. It is the යක්කොමඩු, *Yak-komaḍu* of the Siṇhalese.

Some of us may recollect the fearful results of a mistake committed a couple of years ago by a servant girl at Dingwall, a place within three miles of my native village, in the North of Scotland, where the root of the Aconite or "Monkshood" was used with the gravy of some roasted meat, instead of that of the Horse raddish. Three of the gentlemen who partook of it, died within two hours, while the others narrowly escaped with their lives. The "Monkshood" is identical with the *Bikh* poison of the Himalayas, and is known as one of the most deadly of vegetable poisons.

### Vine.

There is no doubt that immediately after the waters of the deluge had removed from the face of the earth, this plant was trained and reared by the hand of man ; for, it is said, "Noah began to be an husbandman, and he planted a vineyard." (Gen. ix. 20.) The spies sent from Kadesh-barnea to explore the promised land, brought back, amongst other fruits, a large buuch of grapes ;—and there is constant reference to the Vine and Grapes in the Old and New Testaments. The real Grape Vine here meant is grown in gardens all over Ceylon, but bears fruit successfully at Jaffna only, I believe. There are sixteen species of the same genus indigenous to Ceylon. I have seen the bunches of fruits of one species in the forests, so large, that one of them would be sufficient to form a load for a cooly.

### Balm of Gilead and Spices.

" My beloved is gone down into his garden, to the beds of spices." (Cant. vi. 2.) " Is there no balm in Gilead, is there no physician there." (Jer. viii. 22.)

The tree which produced the Balm of Gilead is involved in obscurity. This, and Bdellium, Myrrh, and Incense or Frankincense, are evidently the produce of the same natural order of plants to which our Mangoes belong.

The *kiluvai* and *mukkiluvai* which form such beautiful fences in the Northern Province, produce a very fragrant

gum. The *kiluvai* is evidently the *Protium caudatum*, W. and A. The *Canarium* of the North, and the *mala-kakunas* of this part of the Island, produce resins which are carefully collected, and are said to form the Incense used by the Roman Catholic Priests. On visiting lately the famous Church of St. John, in Malta, the heavy smell of its interior reminded myself and a fellow-traveller very forcibly of the sensation experienced on entering the Buddhist and Hindoo Temples. It seems strange that the two flowers most commonly used in the Buddhist Temples here, viz., the large yellow ones of the *Allamanda Cathartica*, and those of the *Plumeria accuminata*, should both (like the sacred *Bó*) be foreign plants.

The Elm in Hosea (iv. 13.), and the *Teil* tree of Isaiah (vi. 13), should have been translated Terebinth or Turpentine tree. This tree also belongs to the same natural order as our Mangoe, the peculiar flavour of that fruit being referable to the quantity of turpentine in it.

## Coriander, Saffron, Cummin, Wormwood, Anise, Mint and Rue.

"The manna was as coriander seed, and the color thereof as the color of Bdelluim." (Numb. xi. 7.) "Woe unto you scribes and Pharisees, hypocrites! for ye pay tithe of mint, and anise, and cummin, and have omitted the weightier matters of the law, judgment, mercy and faith." (Matt. xxiii. 23.)

Coriander, Cummin and Anise all belong to the same tribe of plants, and are known to us all as common bazaar stuffs for Curries. Most of them grow in Ceylon too. They are known in the bazaars as *asamódagan*, *kottamalli*, and *Hín-ṇduru*. The plant referred to as Anise should have been translated Dill, which also grows in Ceylon.

"Spikenard and saffron; calamus and cinnamon, with all trees of frankincense; myrrh and aloes, with all the chief spices." (Cant. iv. 4.)

The saffron here referred to, is made from the dried

stamens of the *Crocus sativus*, and must not be confounded with the root so extensively used in curries here, and by the dancing girls at Temples to color their bodies with. This is properly Turmeric, though invariably called Saffron by the natives. The real Crocus is common in the bazaars as a medicine.

"Behold, I will feed them, even this people, with wormwood, and give them water of gall to drink." (Jer. ix. 15.) One species of the wormwood plant is grown in pots about Colombo, and there is another indigenous to Ceylon. It is a composite plant, and it is most likely that the wormseeds or *kirumisaturu* of the bazaars, and the salt of which is now used so beneficially in Colombo as an anthelmintic, are the produce of the wormwood of the Bible.

"Ye tithe mint and rue and all manner of herbs, and pass over judgment and the love of God." (Luke xi. 42.)

One species of Mint is indigenous to Ceylon, and the Spearmint and Pepermints have been cultivated here for a long time, and are common in the Island. The Rue plant is also cultivated in Ceylon.

## CONCLUSION.

The Algum or Almug trees brought by Hiram from Ophir are supposed to have been the Sandal wood tree, and which was growing in Ceylon in Moon's time. When lately in the magnificent Palace of the Pacha of Egypt, at Alexandria, I saw one large room, the flooring of which was composed of Sandal wood.

The Hindú Temple of Somnat, in Guzerat, which was plundered and destroyed by Muhammad of Ghuzni, had gates made of Sandal wood. These were carried off by the conqueror, and afterwards formed the gates of his tomb, whence, after 800 years, they were taken by the British conquerors of Ghuzni, and brought back to India in 1842. Many of you may recollect Lord Ellenborough's memorable despatch

on the subject; and you will have smiled at Knighton's unaccountable substitution of Sandal for Satin wood, in mentioning the material of which the Péradeṇiya Bridge was built.

The *Cockle* seems to have been identical with our Prickly Brinjal, the *kaṭu-wambaṭu* of the Siṇhalese, and a species of *Solanum*.

The Bay tree or Bay Laurel does not grow here, but the Cinnamon and other trees are representatives of the family to which it belongs.

The Shittah tree (Isa. xli. 19) is supposed to have been a species of Acacia, of which genus we have eight species indigenous to Ceylon. In riding from the Hotel at Alexandria to see Cleopatra's Needle and Pompey's Pillar, I found that the tree which formed avenues all along the roads, was the *Súrya-mára* of the Siṇhalese, the *A. speciosa* common in Colombo, and one of which is often in flower in front of the Queen's House. It is not unlikely that Anthony and Cleopatra may have reposed under the shade of this species of tree in the vicinity of Alexandria.

The word Ebony occurs only once in the Bible. (Ezek. xxvii. 15.) Several trees producing Ebony of various qualities are found in India, Mauritius and elsewhere, but Ceylon is famed for its Ebony, and there are no less than 21 species of it indigenous to the Island. There is frequent allusion in the ancient Poets to Ebony.

"———— sola India nigrum.
Fert ebenum ————————." *(Virg. Georg. 11. 117.)*

"This ground with Bacchus that with Ceres suits:
That other loads the trees with happy fruits;
A fourth with grass, unbidden, decks the ground;
Thus Tmolus is with yellow saffron crown'd;
India *black ebon* and white Iv'ry bears
And soft Idume weeps her od'rous tears.

*Dryden, Virg. Georg. 1.*

"They sacrifice upon the tops of the mountains, and burn incense upon the hills, under oaks and poplars and elms,

because the shadow thereof is good." (Hos. iv.23.) The Poplars above referred to, as well as the trees translated Mulberries in several parts of the Bible, doubtless refer to a species of Poplar, several beautiful varieties of which grow from Persia westward to England. The famous Aspen tree (*Populus tremula*), and likely the tree here spoken, of bears a considerable resemblance to our *Bó*-tree *(Ficus Religiosa)*. The petioles of its leaves are so arranged, that if the slightest breath of wind blows, they tremble; and it was formerly supposed that it obtained this trembling motion from the circumstance that the Cross on which our Saviour was crucified was made of its wood. The leaves of the *Bó*-tree tremble in the same way, in consequence of their long slender petioles and the accuminations on their leaves. This trembling is said, in the Buddhist books, to have been communicated to it from the circumstance that it was the first tree under which Buddha reposed.

"The vine is dried up, and the fig-tree languisheth; the pomegranate tree, the palm tree also, and the apple tree even all the trees of the field, are withered; because joy is withered away from the sons of men." (Joel i. 12.) The "Apple tree" in the above passage, as well as the "Apple" so often referred to by Solomon, in his Song, and in Proverbs, is, doubtless, the Citron, which is grown in several places in Ceylon. The Shaddock, known to us all, was long ago called the Forbidden fruit, or Adam's Apple, and it is sold as such to the present day in the London shops. It is generally called Pumalo, and belongs to the same genus as the Citron.

The Sycamine is a species of Mulberry, known as the *Morus nigra*, and which our *raṭa-ęmbilla*, or Indian Mulberry, common here, a good deal resembles.

The Aloes mixed with Myrrh, and put on the body of our Saviour by Nicodemus, appear to have been the produce of a species of *Aquilaria*, of which our *paṭṭa-walla* (*Gyrinops walla*), is a representation.

# THE SUPPOSED IDENTITY BETWEEN NAGARJUNA AND NAGASENA,

By James D'Alwis, Esq., *Asst. Secretary.*

Having on a former occasion expressed my views on the passage extracted from the *Rája Tarangani*, in reference to its *prosodial* precision, I now return to the subject, with the object of reviewing the reasons adduced by the Hon'ble Mr. Turnour in favour of the alleged identity between Nágaséna and Nágarjúna. This position, I perceive, he has laboured to establish in seven different ways :—

1. By the evidence supposed to be furnished by a Bactrian coin found by Lieutenant Burnes ;

2. By supplying a supposed omission of a letter in the text, by which the age of Nágarjúna is brought to correspond exactly with that of Nágaséna in the Buddhist Scriptures ;

3. By identifying Aṣóka of Kashmir with the Aṣóka of Maghada ;

4. By the strong resemblance between the two names ;

5. By shewing that the title of *Bhumishwara* given to Nágarjúna did not militate against the hypothesis he sought to establish ;

6. By identifying "the six Arahatvas" in the extract made by Professor Wilson with the six Tirtakas mentioned in *Milindappraṣna ;*

7. By an adjustment of dates, so as to bring the Chronology of the *Rája Tarangani* tc coincide wite the adjusted

Hindú Chronology, and with the *Aṭṭakathá* of the *Pitakattya*, and *Máhawaṇsa*

*First.* As to the evidence supposed to be furnished in favour of this hypothesis by the Bactrian coin described in the Bengal Asiatic Society's Journal, vol. II. p. 314, &c., I am willing to abide by the opinion subsequently expressed by Mr. Prinsep, in the following note to Mr. Turnour's observations on the subject.

"Most of our readers are aware that the date assigned in our notice of Lieutenant Burnes' coin, was afterwards in a measure abandoned, on the ground of its being found in association with Sassanian coins of much later period. The reading of the letter P in KANHPKOM was also confirmed by a multitude of specimens. No argument, therefore, can safely be built on the evidence of this coin as to the period of Nágarjúna's mission, but there remains ample authority without it, in the written history of the Buddhist Church." *

Abandoning therefore this item of evidence, I shall proceed to a consideration of the second.

*Second.* I have already examined the text with reference to the alteration suggested by Mr. Turnour upon this head; and the correctness of *shardan-varsha-satan*, "one century and a half," as given in the Nágara version, is attested by the general scope of Kashmirian history, which brings down the fifty-one reigns, including those of Turushka princes and of Abhimanya (in whose reign, as well as afterwards, the Buddhists cherised by the learned Bodhisatwa Nágarjúna, maintained the ascendancy†), to only B. C. 1182. It would thus seem that the criticism offered is inadmissible, not only upon the supposition of an "inaccuracy of some transcriber of the work," but upon every other conceivable ground, except that of an error, as hinted by Mr. Turnour himself, of "Kalhana Pandit's having misunderstood the Buddhistical writers from whom his authority was derived." Indeed, it would be im-

* See Bengal Asiatic Journal V. p. 535.
† Asiatic Researches, xv. pp. 113, 114.

possible to adjust this date with precision, even according to Bhuddhistical writers, unless we obtain proofs in support of the next hypothesis of Mr. Turnour, to which we now turn our attention.

*Third*, That Aṣóka of Kashmir was identical with the Maghada prince of that name. True it is, that in addition to the resemblance in the names, some little incidents of life, as related of Aṣóka in the *Rája Tarangani*, accord with the same facts detailed in Ceylon and Indian Annals of the Aṣóka of Maghada : as for instance, his abolishing the Brahminical rites, and substituting those of Jina or Buddha (*Rája Tarangani* in "Asiatic Researches," xv. p. 19, and *Maháwansa*, pp. 23, 26); and his "*not* having been the direct descendant of his predecessors, who reigned in Kashmir," as attested by the genealogy given in the *Vishṇu Purána*.

Opposed, however, to these marks of resemblance, are the following points of discordance; *First*, the Aṣóka of Kashmir appears, from the whole tenor of the *Rája Tarangani*, to have been a resident of that country; whereas the Aṣóka of Hindú and Bhuddhistical annals, was a prince of Pátaliputtra (modern Patna), who had previously held the government of Uggeni (Avanti) before his inauguration (*Maháwansa*, cap. v.) *Second*—The mission of Buddhist priests into Kashmir, the abolition of Nága worship, and the visitation of tempests, are related in *Maháwansa*, cxiii. as having occurred during the reign of Aṣóka of Patna, whilst the same incidents are detailed in the *Rája Tarangani* as having taken place in the reign of Abhimanya, ("Asiatic Researches," xv. p. 24.) One other reason, and it is a weighty one, for the non-identity of the two Aṣókas is, that Kashmir is not included in the number of countries over which the Indian Aṣóka reigned ; and according to the Girnar inscription of that monarch, where all the conquered states are named, he was "Lord of the countries of *Avanti*, *Anupa*, *Vrija*, *Anartta*, *Surashtra*, *Savara*, *Kukura*, *Kirata*, *Tisha*

and others, all conquered* by his own might, and maintained in their former prosperity, and all their inhabitants, both high and low, converted into obedient subjects—all these countries, under His Majesty forming one Empire, and furnishing every object of desire and gratification."

Be these differences, however, as they may, the marks of resemblance, and therefore mere presumptive proofs in support of the hypothesis, become perfectly valueless, when we refer to the direct evidence contained in the *Rája Tarangani*, of the descent of Prince Aṣóka, of Kashmir. In the *Rajavali Pataka*, by Prajya Bhatta, brought up to the conquest of the valley by the Emperor Akbár, (printed at Calcutta, edition, of 1835,) occurs the following passage :—

Athánya vansha jó rájá ; Gódharó náma bhágya ván [35 v. 7m.]
Tadangâjáh Suvarnakhya [v. 60.] s'tatsúnur Janakónrupah [v. 6.]
Sachínaras tassya súnu [v. 71.] r'Asóka-stat pitruvyajah [v. 62.]
Jalawkastatsutó náma Kashmíréshu sukapradah [30. v.]

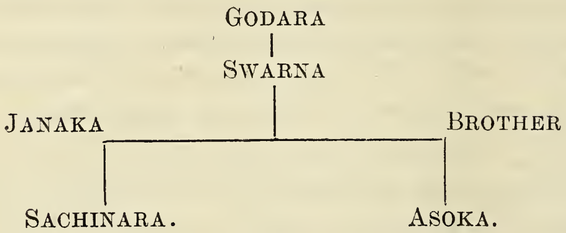
"Thereafter, an illustrious prince named Godhara, born of a different race (reigned 35 years and 7 months), his son Swarna (60 years), his son king Janaka (6 years), his son Sachinara (71 years), his father's brother's son (*i.e.*, cousin) Asóka (62 years), his son named Jalawka, the benefactor of Kashmira (30 years).

If therefore my translation of this passage be correct, the identity attempted to be instituted between Aṣóka "the *son* of Sachinara's father's brother," (upon the supposition that he was only *descended* from the paternal great uncle of Khagandra†), and the Indian Aṣóka, the grandson of Chandragupta, and the son of Bindusara, falls to the ground. For, according to the genealogy here given, Aṣóka was the grandson of

* "The native chronicles of Cashmir," says Sir Erskine Perry in an account of this great Hindu Monarch, &c., in the Bombay Asiatic Journal, xiv. p 173, "ascribe its acquisition to *inheritance*."

† "Descended from the paternal great uncle of Khagendra."—Pr. Wilson.

Swarna, and not of Chandragupta. Thus:




Again, the *Raja Tarangani* records the accession of Jalawka, a son of Aṣóka, upon the demise cf that Kashmiran Prince. All those who are conversant with Siŋhalese and Hindú history, know, however, that this was not the case.

Although I differ from Mr. Turnour upon these and other points, to which I have adverted in the course of my observations, I freely confess, that a careful consideration of all the surrounding circumstances leads me to the same conclusion at which that eminent scholar has arrived, viz., that *Nágarjúna of the Hindús, and Nágáséna of the Ceylonese, was one and the same identical person.* I shall therefore proceed to consider

*Fourthly.*—The resemblance between the two names, which is very striking. The *r* in *Nágarjúna* is clearly a creature of the Sanscrit, and it is dropped in the Páli and Siŋhalese. The interchange of *j* and *s* is well known. *Rája* is expressed *rásá* in Tamil; Jambudwípa is expressed Zambuduvipa in the Analysis of Tibetan works, by Ksoma de Korosi, and so on. The interchange of vowels, especially *u* into *e* is frequent. Thus the resemblance in the two names furnishing a strong presumption in favour of the identity of this Kashmiran and Buddhistical personage, I proceed to a consideration

*Fifthly.*—That the title of *Bhumeshwara*, may be applied to an Ascetic. *Bhumeshwaro* and *Bodhisatwo* are two of the appellations given to Nágarjúna. The former is usually applied to statesmen, and the latter to celebrated and eminent

hierarchs of the Buddhist Church. It has been shewn by Mr. Turnour, that the first was also applied to priests; and the second, we know from our own records, to princes; for instance, in our own country *Ṣrí Sanga Bó*, who had taken upon himself the vows of the *Aṭa-sil* order is called a Bodhisatwa, in the following extract from the "Attanagaḷuwaṇsa":—

Lankábhi sitta vasudhádi patésu rájá
Yó bódhi-satta gunawá Siri-Sanga bódhi;
Tassáticháru chariyá rachaná mukhéna
Vakkhami Hattha-vanagalla Vihára wansan.

"I celebrate the history of the Temple of Attanagalla; and first dwell on the highly laudable conduct of Ṣrī Sañga Bo, who was a *Bhodhisatwa* among the sovereigns of Lanka."

The meaning assigned to this term in the *Rája Tarangani*, though not comprehensive, may yet be regarded as approaching to correctness, for the historian himself thus explains its signification in the following stanza:—

Loké bhagawató lóka, nathá dárabhya kéchana
Yé janta vóga takkléshán, bódhisatwána véhitán.

"Know ye that if there was any person in the world, from the sanctified Buddha downwards, who had destroyed Klésha, he is a *Bhodhisatwa.*"

But, whether we regard this distinguished personage as one who denounced the six arahatwas, according to the rendering of the passage by Professor Wilson, or take him as one who had passed six days in the wilderness, as described in the Nágara version, there is, in either case, nought to doubt the alleged identity between Nágarjúna and Nágaséna. It would however seem, that from these appellations alone we cannot ascertain the precise character of Nágaséna. Yet the criticism which I have already offered, and by which the text was altered into "*shadar vana sanshraye*," as one who "spent six days in the wilderness," enabling us to fix upon the sacerdotal or the ascetic character of Nágarjúna, we proceed to a consideration

*Sixthly.*—Of the supposed identity between the "*shadarhatwa*," or the six Arahatwas, in the passage as given by Professor Wilson, and the six Tirtakas in the *Milindappraṣna.* If the passage were as given by Professor Wilson, there would doubtless be great reason, especially when viewed in connection with other circumstances, to raise a strong presumption in favour of the alleged identity. Not the less strong, however, is the presumptive proof of resemblance, when we take the text to mean (instead of that he denounced the six Tirtakas) that he usually spent six days in the wilderness. For we find, that the passing of six days in the wilderness, was an ascetic rite prescribed by Buddhism.

The *Milindappraṣna* records the fact, that Nágaséna attained the sanctified status of an *Arahat;* and we not only learn from the same record, that *niródhi samapatti* of passing six days in the wilderness was an ascetic rite of the arahat, but the same is also found defined in the *Visudha Márga.*

There is, therefore, much coincidence between the facts detailed in the two historical records ; and there is also much concurrence between the statement of Nágaséna's having overcome all the disputants of his age, (see the text), and the facts stated in the following stanzas in the *Rája Tarangani*, which records,

Tasmin navasaré bowddhá déshé prabalatányayuh,
Nágárajunéna sudhiyá bodhisatwéna pálitáh.
Téwádinah parájittya vádéna nikhilánbudhán,
Kiriyán Níla puránóktá machchindannága madvisah.

"That at that time (in the reign of Abimane) the Buddhas cherished by the wise Bodhisatwa Nágarjúna attained eminence in this country (Kashmira); and that they who were disputants and enemies of the religion, (*i.e.*, the national religion, or of Vedas) overcame all the wise men in argument, and set aside the practices prescribed in the Níla purana."

Having reviewed six grounds, upon which Mr. Turnour has based his observations on the identity between Nágarjúna and Nágaséna, I come to the

*Seventh*;—and here I cannot but express my entire concurrence with the remarks so ably set forth by him. In addition to those remarks under this head, I may be permitted here to observe, that the Tibetan Buddhistical annals, as presented to us by Ksoma de Korosi, indisputably establish the identity in question.

Ksoma de Korosi in his analysis of the Tibetan Annals, (see "Asiatic Researches," vol. xx. p. 400,) alluding to the same prediction contain in the "Mahawaṃsa," regarding Nágasèna, records as facts to be found in the *Sher-chin* collection, that "Nágarjúna lived 400 years after the death of Shákya, who had foretold of him, that he would be born, after so many years, to explain the higher principles laid down in the *Prajna Paramita*." In regard to Kanishka, (one of the Turushka princes mentioned in the *Raja Tarangani*,) it is also stated in the Tibetan annals, that one of the Buddhistical convocations took place in the time of that prince, "*Kanishka*, a king in the north of India, *upwards of* 400 *years* from Shakya." ("Asiatic Researches," vol. xx. p. 41.) It will be seen also, that I introduced into a paper which I read before this Society, "On the Mythological Legends of the Siṃhalese," an extract from a little pamphlet which records that Nágaséna was a distinguished hierarch of the Buddhist Church in 490 A.B.

After a careful perusal of these facts, it is indeed impossible to withhold the conclusion to which they inevitably lead, viz., that *the personage designated Nágarjúna in India, and Nágaséna in Ceylon, was one and the same person;* and that *the ages of 400 and 500 A.B.*, (assigned to him in round numbers by the two countries respectively,) *are to be regarded as approximating rather than specific dates.*

# EXPENDITURE ON PUBLIC WORKS IN CEYLON.

By J. Capper, Esq., *Honorary Secretary.*

It was not long since, that my attention was directed to a paper read by Colonel Sykes before the Asiatic Society of Great Britain, on the Expenditure on Public Works in India, and a perusal of it induced me to enter upon the subject of Public Works in Ceylon. It is a topic full of interest, taking us back in our researches, to the earliest records of Sinhalese History, when Ceylon, densely peopled, actively industrious, and highly prosperous, produced works of Irrigation, of such magnitude and number as to have raised the wonder of later rulers of the Island, who have hitherto vainly strove to follow even distantly in their steps, by renovating and utilising a few of the gigantic Tanks which lie scattered in ruins over the jungles and swamps of many parts of Ceylon.

As I entered upon this most interesting topic, I found my materials increasing on my hands ; I found the subject extending as I progressed, until I preceived, that instead of a short statistical paper, my researches would lead to an Historical Treatise, to follow up which and do it ample justice, would require more time than I could, for the present, devote to it. This being the case, I felt reluctantly compelled to confine my notes and remarks at this time, to the extent and outlay on Public Works in Ceylon, during a little more than a quarter of a century.

On casting our eyes over the materials for such a paper as this, we cannot fail to be struck with the contrast presented

by the records of the various Governments that have at different periods ruled in Ceylon.

The Siṇhalese Monarchs, jealous of foreign intruders within their domains, so far from opening up their Territories by roads, carefully closed up all access to the interior from the sea-bord, leaving nothing but the most difficult and steepest bullock paths. On the other hand, their utmost efforts, the united labour of their people, was directed to the construction of Buddhist structures of colossal magnitude, and Tanks of vast extent. In almost every Chapter of the translated and untranslated portions of that great Historical work, the "Mahawaṇsá," we meet with notices more or less brief, but still explicit enough, of the many great public works undertaken by the various Monarchs whose reigns and whose characters are therein chronicled.

Deeply impressed with the importance of and even necessity for a careful and extensive utilising of the water supply of large tracts of country, if those regions were to be made permanently productive, the religious code of their faith enjoined the construction and upkeep of tanks, canals and water-courses, as a sacred duty, and one that should go far to obtain for them hereafter the greatest reward of their existence.

Upon the details connected with Siṇhalese Public Works, I cannot now enter; but must content myself with merely observing, that the existence of the great tanks and water-courses now in ruins, or in partial restoration, were the means, in those remote days, of feeding a much larger population than Ceylon can now boast of, and rendered her perfectly independent of India for her supplies of Grain. Even more than this; it is on record, that so late as the Portuguese period, rice was exported from Ceylon. What the extent and cost of some of those works must have been, may be gathered from one of our present Governor's Minutes, in which, speaking of Irrigation works in the North-east of the Island, he says of one of them, that it must have occupied a million of men for ten or twelve years in its construction.

The Portuguese do not appear to have devoted any attention to these matters : we can find no trace of any efforts on their part to improve the agriculture of Ceylon. It is true, the greater part of the ancient works of the Siṇhalese monarchs were situated in districts beyond the territories of the Portuguese, but with those which were in their immediate neighbourhood, nothing whatever appears to have been attempted,

The Dutch, far more skilful as Colonists than their predecessors, and ever mindful of work connected with Agriculture and Commerce, devoted much time and labour to canals, and we have good reason for believing to some of the nearest tanks.

The only light thrown upon their labours in the matter of Irrigation works, is contained in the despatches of the Dutch Governors, published at intervals ; but there is no doubt much more valuable information contained in the Dutch records lying in the almirahs of the Colombo Kachcheri. Several reports on the Giant's and other great tanks, by Dutch engineers, are in existence, and have proved of use in the recent engineering operations of our Government.

Although surveys and reports on several important tanks were made in the early part of the British rule, Sir Edward Barnes may be said to have inaugurated Public Works under our Government, by the commencement of the great Kandy Road in 1821. The Péradeṇiya Bridge, and other useful works followed, but it was not until coffee had drawn so many enterprising cultivators to the Island, that the Department of Public Works assumed any great importance.

*STATEMENT of Outlay on Public Works in Ceylon since 1830.*

| Years. | Roads and Canals. | Buildings. | Total. |
|---|---|---|---|
| | £ | £ | £ |
| 1830 | 3,327 | 2,403 | 1,730 |
| 1831 | 3,916 | 4,570 | 8,536 |
| 1832 | 4,651 | 4,549 | 9,200 |
| 1833 | 11,391 | 5,188 | 16,579 |
| 1834 | 17,281 | 7,991 | 25,272 |
| 1835 | 17,111 | 7,038 | 24,149 |
| 1836 | 28,301 | 15,014 | 43,315 |
| 1837 | 43,226 | 11,552 | 54,778 |
| 1838 | 22,468 | 5,488 | 28,958 |
| 1839 | 7,820 | 3,393 | 11,213 |
| 1840 | 16,921 | 4,957 | 21,878 |
| 1841 | 26,410 | 6,936 | 33,346 |
| 1842 | 20,655 | 5,963 | 26,618 |
| 1843 | 20,906 | 3,443 | 24,349 |
| 1844 | 38,302 | 6,180 | 44,482 |
| 1845 | 56,192 | 10,123 | 66,316 |
| 1846 | 63,313 | 16,748 | 81,061 |
| 1847 | 70,711 | 15,672 | 86,381 |
| 1848 | 40,239 | 13,793 | 54,032 |
| 1849 | 42,227 | 6,822 | 49,049 |
| 1850 | 49,196 | 8,205 | 57,401 |
| 1851 | 57,330 | 4,021 | 61,351 |
| 1852 | 56,440 | 13,176 | 69,616 |
| 1853 | 55,849 | 4,973 | 60,822 |
| 1854 | 52,131 | 5,654 | 57,785 |
| 1855 | 63,330 | 8,773 | 72,111 |
| 1856 | 77,729 | 18,300 | 96,029 |
| 1857 | 102,261 | 31,037 | 133,298 |

*THE following are the miles of roads made during various periods:—*

| | | | | | |
|---|---|---|---|---|---|
| Previous to | ... | 1820 | ... | 108 | miles. |
| During | .. | 1821 | ... | 212½ | ,, |
| ,, | . | 1824 | ... | 54 | ,, |
| ,, | ... | 1828 | ... | 55 | ,, |
| ,, | ... | 1831-33 | ... | 162 | ,, |
| ,, | ... | 1834-36 | .. | 99½ | ,, |
| ,, | ... | 1837-40 | .. | 11½ | ,, |
| ,, | .. | 1841 | ... | 86½ | ,, |
| ,, | ... | 1842 | ... | 67½ | ,, |
| ,, | ... | 1843 | ... | 156½ | ,, |
| ,, | ... | 1844 | ... | 171 | ,, |
| ,, | ... | 1845 | .. | 177 | ,, |
| ,, | ... | 1846 | ... | 158½ | ,, |
| ,, | ... | 1847-49 | ... | 81½ | ,, |

The operation of the Road Ordinance since its introduction in 1848, has, perhaps, done more for the prosperity of Ceylon than any other measure we could name. Thoroughly popular amongst the natives, it has opened up tracts of country hitherto unavailable for wheeled traffic, and has enabled the

# APPENDIX.

# PROCEEDINGS OF MEETINGS.

## GENERAL MEETING,

*8th May, 1858.*

*Present:*

The Rev. B. Boake, in the Chair.

| | |
|---|---|
| J. Dalziel, Esq. | L. De Soyza, Esq. |
| J. H. Marsh, Esq. | J. Maitland, Esq. |
| C. A. Lorenz, Esq. | M. Coomarasamy, Esq. |
| James Alwis, Esq. | The Rev. J. D. Palm. |

Proceedings of last Meeting were read and confirmed.

The Secretary laid upon the table Part I. of the Society's Journal for the past session, and stated that the second part was making progress in the printer's hands.

The Curator stated that he had met with a qualified person to act as Taxidermist to the Society, for a moderate remuneration; and hoped now that the means existed for properly preserving specimens, Members at outstations and their friends, would lose no opportunity of forwarding such objects as might present themselves.

*Resolved,* that if necessary, £10 might be expended in the purchase of a suitable glass case for the Museum.

The Secretary having requested permission to name an Agent in London for the sale of the Society's Journal,

*Resolved,* that he be allowed to request Messrs. Van Voorst and Co., of Paternoster Row, to act as Agents, and to sell the Journal for Four shillings each Number.

The Vice-President having directed attention to the opinion which prevails very generally, as to the decrease in the population of Ceylon, supposed to arise from the neglect of female infants,

*Resolved*, that the Secretay be requested to draw up and distribute amongst Members and others, a form, calculated to elicit information on this point, and that the results be placed before a future Meeting.

On the motion of the Secretary, seconded by J. Dalziel Esq., A. O. Brodie, Esq., of Matale, was re-elected a Member of this Society.

The following gentlemen were then ballotted for, and declared duly elected as Members, viz :—

| | |
|---|---|
| J. Bailey, Esq. ... ... | Proposed by L. de Soyza, Esq.<br>Seconded by J. Alwis, Esq. |
| C. H. Stewart, Esq. ... | Proposed by J. Alwis, Esq.<br>Seconded by J. Dalziel, Esq. |
| Geo. Wall, Esq. ... ... | Proposed by J. Capper, Esq.<br>Seconded by C. A. Lorenz, Esq. |

The following papers were then read :—

"The Laws of the Buddhist Priesthood," by the Rev. D. J. Gogerly.

"A selection of Sinhalese Proverbs," by L. de Soyza, Esq.

"Sinhalese Mythology," by J. Alwis, Esq.

---

## GENERAL MEETING,

*August 21st, 1858.*

*Present :*

The Honorable Sir W. Carpenter Rowe, Chief Justice, in the Chair.

| | |
|---|---|
| The Rev. J. D. Palm | M. Coomarasamy, Esq. |
| Rev. B. Boake. | L. Nell, Esq. |
| C. P. Layard, Esq. | W. Skeen, Esq. |
| J. H. Marsh, Esq. | J. Maitland, Esq. |

The Secretary.

The Minutes of the previous Meeting were read and confirmed.

The Librarian laid on the table the Books and Periodicals received since that date, viz :—

| | | |
|---|---|---|
| Balfour's Cyclopædia ... ... | 1 Vol. | |
| Calcutta Review ... ... ... | 8 Nos. | |
| Engineer's Journal .. ... ... | 6 Nos. | |
| Capper's Three Presidencies of India ... ... | | from J. Capper, Esq. |
| Mulloch's Siam ... .. ... ... | | from J. Capper, Esq. |
| Montriou on Hindu Law ... ... ... | | from J. Capper, Esq. |
| Handbook of New Zealand ... ... ... | | from J. Capper, Esq. |

The following Gentlemen were then proposed and seconded, as under, and, having been balloted for, were duly elected Members, viz :—

| | |
|---|---|
| The Hon'ble C. TEMPLE, Esq. | Proposed by The Hon'ble the Chief Justice. Seconded by M. Coomarasamy, Esq. |
| The Hon'ble H. B. THOMSON, Esq. | Proposed by The Hon'ble the Chief Justice. Seconded by J. Alwis, Esq. |
| W. DENIS B. HARRISON, Esq., C. E. .. ... ... | Proposed by C. P. Layard, Esq. Seconded by J. Capper, Esq. |
| J. P. GREEN, Esq. ... ... | Proposed by J. Capper, Esq. Seconded by J. Maitland, Esq. |
| W. FERGUSON, Esq. ... ... | Proposed by J. Alwis, Esq. Seconded by J. Capper, Esq. |

The Secretary then placed before the Meeting the following Papers :—

"Descriptions of additional species of Molluscs, Sea Anemones, &c.," by E. F. Kelaart, Esq., M. D.

"The Scripture Botany of Ceylon," by Wm. Ferguson, Esq.

"On Sinhalese Rhetoric," by J. de Alwis, Esq.

"A Statistical Enquiry into the state of Crime in Ceylon," Part I., by John Capper, Esq.

## GENERAL MEETING,

*December 18th, 1858.*

*Present :*

Sir W. C. ROWE.
Rev. B. BOAKE.
WM. FERGUSON, Esq.
C. P. LAYARD, Esq.
Dr. MISSO.
M. COOMARASAMY, Esq.
J. CAPPER, Esq.

The Secretary laid on the Table the following Books, received since the last Meeting :—

Journal of the Asiatic Society of Bengal, 5 Vols.
Calcutta Review, 1 Vol.
Engineer's Journal, 6 Nos.
Oriental Interpreter, 1 Vol.

It was stated, that a reprint of the first Volume of the Society's Journal was now completed, and would be ready for distribution

in a few days, when Members wishing for copies may obtain them on application to the Secretary.

The Secretary informed the Meeting, that the result of their application to the Government was a grant from the Public funds of £200, to enable them to form a Library and Museum; and that the Governor has also appropriated to the use of the Society two rooms at the north angle of the new public buildings, lately occupied by a portion of the Civil Engineer's Staff, and adjoining the Auditor-General's Offices. They would, in all probability, obtain possession of their rooms early in January, so that their next General Meeting might be held in them. The Society's thanks were due to Sir Charles MacCarthy, who had exerted himself to secure these advantages to them.

The following Gentlemen were then proposed as Members of the Society, and, being balloted for, were declared duly elected:—

| | |
|---|---|
| C. H. Newton, Esq. .. | Proposed by J. De Alwis, Esq.<br>Seconded by J. Capper, Esq. |
| F. Saunders, Esq. .. | Proposed by Sir W. C. Rowe.<br>Seconded by J. Capper, Esq. |
| The Hon'ble P. I. Sterling. .. .. | Proposed by Sir W. C. Rowe.<br>Seconded by C. P. Layard, Esq. |
| C. Dias, Esq., Mudlr. .. | Proposed by C. P. Layard, Esq.<br>Seconded by J. De Alwis, Esq. |
| Rev. E. Mooyaart .. | Proposed by J. Capper, Esq.<br>Seconded by Dr. Misso. |
| Dr. Elliott .. .. | Proposed by C. P. Layard, Esq.<br>Seconded by Wm. Ferguson, Esq. |
| A. M. Ferguson, Esq. .. | Proposed by C. P. Layard, Esq.<br>Seconded by M. Coomarasamy, Esq. |
| R. V. Dunlop, Esq. .. | Proposed by C. P. Layard, Esq.<br>Seconded by Wm. Ferguson, Esq. |

The reading of the following Papers then took place, viz:—

"The Laws of the Buddhist Priesthood," by the Rev. D. J. Gogerly.

"On the supposed identity between Nargesena and Nargajuna," by James De Alwis, Esq.

"On Public Works in Ceylon," by John Capper, Esq.

## ANNIVERSARY MEETING,

*Monday, September 12th, 1859.*

The Honorable Sir W. Carpenter Rowe, Chief Justice, in the Chair.

The Secretary proceeded to read the following

### REPORT FOR 1858-9.

In placing their Report for the past year before the Society, the Committee desire, in the first place, to express the satisfaction they feel in being able to assemble in rooms placed at their disposal by the liberality and consideration of the Governor.

The want of proper accommodation for their Museum and their Meetings had long been felt; but it was not until the position of the Society was brought to the notice of His Excellency, by the Deputation which waited upon him for the purpose, that this most desirable object was attained. Your Committee have also to report the liberal grant of £200 from the public funds, made by the Government to the funds of the Society, to enable it to extend and improve its Museum and Library.

At the interview which His Excellency the Governor accorded to the Deputation, they received the strongest assurances of countenance and aid which they could have desired. In consequence of this interview, a paper drawn up by the Hon'ble the Chief Justice, was forwarded to the Governor, who, in addition to the favours already mentioned, gave permission to the Committee to transmit, through the medium of the Colonial Secretary to the Government Officials at outstations, a Circular, drawing attention to the many ways in which persons in various parts of the Island might assist the Society in its labours, by information, by papers, or by objects for its Museum.

Copies of the Circular, and the papers which accompanied it, are to be found in the Appendix accompanying this Report; sufficient time has scarcely elapsed since the Circular was distributed, to allow of any results from it, but your Committee cannot too strongly express the hope that, if it be received by those to whom it is addressed in a proper spirit, much good may result. The opportunities presenting themselves to gentlemen at outstations, of collecting data respecting their districts on matters interesting to this Society, must be many; and through such, it is hoped, the co-operation of Native Headmen and others may be secured, in procuring suitable objects for the Museum.

Having so recently obtained possession of the present building, the Curator of your Museum has not been able to accomplish much as yet. A commencement has, however, been made, with the Raw Products of the Island; and it is hoped, that during the present session, this collection may be made complete and interesting. Your Committee believe they are not wrong in assuming, that the natural products of a country form the most interesting portion of its wealth, since from them spring so many branches of industry and commerce. As yet but little has been done towards developing the riches which it is believed may be found hidden amidst the jungles of the Southern and North-Westren Provinces, as well as in the forests and plains of the Eastern and Northern Provinces. Evidences are not wanting to shew that Ceylon is rich in Gums, Dye-stuffs, Resins, Tanning substances, and many other articles of considerable commercial value; and, it is thought, that one of the duties of this Society should be, to give a place in its Museum to all articles likely to prove interesting to the man of science, the trader, or the manufacturer.

Your Committee have received through the Honorable the Colonial Secretary, the Prospectus of an Inter-Colonial Exhibition, proposed to be held in the Mauritius in the month of August of the present year. They would gladly have taken an active part as far as practicable in this Exhibition; but felt that the notice was so short, that it would have been impossible to have collected any contributions during the brief period allowed.

They have also received very recently from this Government, a Circular letter, addressed by Her Majesty's Secretary of State to the Governors of Colonies, on the subject of a communication from the Society of Arts and Manufactures, who are anxious to open a correspondence with public bodies in the British settlements, relative to the resources, condition, and development of the trade, &c., of the various British Colonies. Your Committee have referred this correspondence to a Sub-Committee of Arts and Manufactures, consisting of the Honourable the Chief Justice, C. A. Lorenz, Esq., the Revd. J. Thurstan, and the Secretary, in whose hands the matter is left, and who will take upon themselves to communicate with the Society of Arts on the Subject of their Circular.

During the year now terminated, the Society received additions to its Members to the number of 19; whilst the vacancies, caused by departures and deaths, amounted to 3. The total of Members at present borne on the books of the Society is 87, a large number than it could boast of at any previous period.

The Treasurer will place before you a statement of the present condition of the Society's funds, from which you will perceive, that

while the receipts since the revival of the Society in November, 1856, have amounted to £324 4*s*. 7*d*., including the Government grant of £200,—the disbursements have reached the sum of £116 16*s*. 5*d*.; leaving a balance on the 1st January, 1859, in the hands of the Treasurer, of £207 8*s*. 10*d*., subject of course to the expenses of the current year, which have amounted to about £40.

The printing of the Society's Journal for the current year is in an advanced state, and it is hoped that by the end of the year, the Number will be in the hands of Members.

The contents of this issue will be found equally interesting with those of any former Number, and it is confidently hoped, that members both here and at outstations, will not fail to contribute such results of their studies and researches as may be likely to prove acceptable to the Society, and of advantage to the public.

The following is a list of the books, &c., received by the Librarian during the past year:—

*Donations to the Museum.*

Sundry Dye Stuffs and Dye Woods from the North-Western Province, from Mr. Mead.

| | | |
|---|---|---|
| Specimens of Coir, prepared by Machinery, from Mr. Thomas. | | |
| Do. of Kitul Fibre. | | |
| Do. of Medicinal Oils, from Mr. C. P. Layard. | | |
| Do. of Plantation Coffee .. | .. | from various persons. |
| Do. of Native Coffee .. | .. | |
| Do. of Woods .. .. | .. | from New Zealand, by Mr. R. Dawson. |
| Do. of Minerals .. .. | .. | |
| Do. of Native Stone Knife .. | .. | |
| Do. of Vegetable Caterpillar.. | .. | |
| Calcutta Review .. .. | .. | 3 Nos. |
| Journal of Asiatic Society of Bengal | .. | 3 Nos. |
| Do. do. of China | .. | 1 No. |
| Do. do. of Madras | .. | 2 Nos. |
| Do. of Geographical Society of Bombay | .. | 1 No. |
| Do. of Asiatic Society of Bombay | .. | 2 Nos. |
| Engineer's Journal .. .. | .. | 20 Nos. |

---

Moved by the Chief Justice, and seconded by Major Skinner, that the Report now read be adopted.

The Chief Justice, as Chairman, then stated, that it was not his intention to offer any formal written address to the Society on that occasion. Had such an address been required, it would have

come more appropriately from their respected and learned President, Dr. Gogerly, who had contributed the very first paper that had ever been read in that Institution, and whose absence on this occasion he sincerely regretted. Having been called to the Chair, however, in his absence, he felt himself bound to make some brief observations on the able and comprehensive Report which they had just heard,—and especially on that part of it, which commemorated this Meeting of the Society in their own Library and Museum.

On looking into their Minutes, he found that the want of such accommodation had been for years, not only a cause of regret, but of considerable detriment to the collections, books, instruments, and moral interests of the Society. To meet this emergency, Sir Henry Ward had not only put this building at their exclusive disposal, but had accorded to them also a pecuniary grant from the public funds, in aid of the private resources of the Society.

From this day also, as more may reasonably be expected from it, greater zeal, it is to be hoped, will characterise the exertion of its Members.

An ample field for enquiry and discovery still existed in the vegetable, animal, mineral and industrial capabilities of this beautiful island,—and he had great pleasure in calling their attention to some passages from the interesting work now being published by one of their former residents, Sir Emerson Tennent, in which those capabilities were very fully dwelt upon.

The report on the mineral productions of the Colony, to which he alludes, is one of much value; and the minerals collected by the author of that report, Dr. Gygax, are now in their Museum. We all know that iron is very widely disseminated through our hills, but he points out a district near Ratnapura, in which, as he says, it may be found in such quantities, and with such facilities of water-carriage to Colombo, that it may be smelted here with English coal, and rendered as pig iron at £6 per ton.

If he is right in stating, as he does, that anthracite coal may also be raised in considerable quantities in that vicinity, and that the iron itself is of such a quality as not to require the expense of puddling, the cost of manufacture would be so far diminished, as to give reason to hope that these resources might be made practically available for the many public works which are now being carried on around us.

Again, it was within his own, the Chairman's knowledge, that an English gentleman, who had recently visited Ceylon for Commercial purposes, had, through information given him by the Secretary of

this Society, been induced to make researches in our forests and jungles for dyewood, and substances available for tanning, which are there found in great quantities.

He had already so far succeeded in the North-Western Province, that he had actually chartered a ship of 600 tons direct to Liverpool, which was now taking in a cargo of these new products. His attention having been also drawn to a paper by Dr. Gygax, published in the early transactions of this Society, on the coloring matter found in the husk of the coconut, he had made such practical and successful experiments on the subject, as gave reasonable ground for believing that another most useful product might be added to the many already derived from that valuable tree.

He mentioned these things as instances only that there was much here yet to explore.

Sir E. Tennent's very elaborate work, whilst it established beyond all doubt, by reference to specific authorities, that Ceylon was a great mart in very early times for the interchange of traffic between the Eastern and Western worlds, also demonstrated that the natives themselves were by no means an enterprising or commercial people. The Chinese, who are supposed to have frequented Galle in the fifth and sixth centuries, seem to have obtained no exports here, but gems and images of Buddha.

It remained for the Dutch, in after times, to develope the Cinnamon trade; and men of the present generation remember the first planting of Coffee, now the great staple of the Island. English capital and English enterprise might yet add other staples to this, from the thousands of acres of forest that had hardly yet been trodden by human foot.

The report which had been this day read, called their attention to a Circular from the Secretary of State to the Governor, touching a communication from the Society of Arts and Manufactures in London, as to the importance of developing the trade resources of our British Colonies. This shewed the importance attached to such researches at home; and it was in the same spirit that this Society had, some months since, transmitted through the Colonial Secretary's Office at Colombo Circulars to the different outstations—requesting information under the specific heads of natural products, vegetable, animal and mineral, agriculture, irrigation, manures and markets, manutacture and trade, social habits, condition, education, and general statistics of the people. He, the Chairman, was well aware how heavily the duties of official life pressed upon most of our public servants; but still a change of occupation was in itself a relief, and he believed that many a young civilian or soldier, in the solitude of an outstation,

would derive the greatest mental profit to himself, by turning his own attention, and that of the native headmen around him, to such subjects as these.

Sir E. Tennnet, in his book, makes honorable mention of Sir Alexander Johnstone, of Mr. Justice Starke, of Mr. Casie Chetty and others, who had found time amongst their judicial and public avocations, to contribute to the general stock of useful and interesting information touching this Colony. Dr. Gogerly and Mr. Hardy, too, are repeatedly cited by him as the highest authorities on the religion, history, ancient observations, and ancient languages of the natives ;—and above all, he prominently puts forward our excellent Member, Major Skinner, whom we see amongst us here today, as the indefatigable executant of Sir Edward Barnes's enlightened project of not only opening up—by the great work of the Kandy road—the resources, but securing the future peace of the whole of the interior of the Colony.

It could not, then, be too strongly impressed on the public, that every man in his department, either in his own person, or by influencing those about him, might be aiding in this useful work. The statistics of coffee cultivation, the Pearl Fishery, the Úrubóku dam, the Batticaloa irrigation, the tides and currents so seriously affecting the circumnavigating existence of our Colonial steamer ; the state of the elements and atmosphere, so sensibly deranged at every recurring monsoon ; and even the expeditions of the sportsman, if also a naturalist, all afforded opportunity and matter for observation and valuable communications.

No one could have read the Minutes of the progresses made by our present Governor, through the different Provinces, without being sensible of the great importance attached by him to local researches, and to the development of the material resources of the country. Those Minutes, His Excellency had caused to be presented to our Library, and the Chairman trusted that such an example would not be lost on those who had it in their power, by the acquirement and communication of extensive local information, to establish for themselves one of the best claims for Colonial advancement.

He concluded by moving that the Report be received and adopted.

Carried *nem. con.*

Proposed by the Honourable the Chief Justice.
Seconded by C. A. Lorensz, Esq.

"That the thanks of the Asiatic Society of Ceylon, are eminently due to Sir H. G. Ward, as the first Governor of this Island, who, by assigning a public building exclusively for a Museum and Library, and by a grant of public money in aid of its funds, has given to this Society the position of a Colonial Institution.

"That whilst they tender their thanks in this behalf, the Members of the Society also bear in mind, that no Papers have been published of late years in this place, containing matter more interesting and useful than the Minutes of the progresses of Sir H. G. Ward himself, through the different Provinces of his Government; and, inasmuch as it has pleased him to cause a copy of those Minutes to be deposited in this Library, they, with much pleasure accept them, not only as a record of what can be done by an enterprising Governor for the benefit of the governed, but as an incentive to the Members of Her Majesty's Services, to lend their aid by contributing objects of interest and occasional papers to this institution, in developing the natural resources of the Colony."

Carried unanimously.

The following Gentlemen were then balloted for, and declared duly elected Members of the Society: the Honorable W. C. Gibson, Esq., A. W. Baylis, Esq., N. Schultze, Esq., H. Mead, Esq.

*Resolved*, that the Secretary be requested to place himself in communication with gentlemen at outstations, likely to interest themselves in the advancement of the Colony, in co-operation with the Society.

*Resolved*, that the following Gentlemen be the Office-bearers for the ensuing year:—

*President:*

Sir W. C. Rowe, Chief Justice.

*Vice-President:*

Rev. B. Boake.

*Secretary:*

J. Capper, Esq.

*Assistant Secretary:*

J. De Alwis, Esq.

*Treasurer:*

C. A. Lorenz, Esq

*Curator and Librarian:*

J. Maitland, Esq.

*Committee:*

Rev. D. J. Gogerly.
C. P. Layard, Esq.
M. Coomarasamy, Esq.
Rev. B. Boake.
R. Dawson, Esq.
J. P. Green, Esq.
J. H. Marsh, Esq.
L. Nell, Esq.
Rev. J. D. Palm.

*Committee of Papers:*

Rev. B. Boake.
Rev. J. D. Palm.
C. A. Lorenz, Esq.
L. Nell, Esq.
J. De Alwis, Esq.
M. Coomarasamy, Esq.
J. Capper, Esq.

---

## PAPERS REFERRED TO IN THE REPORT.

*Asiatic Society's Rooms,*
*Colombo,* January 26th, 1859.

His Excellency the Governor having, with the advice of his Council, assigned to the Asiatic Society of Ceylon, accommodation for its Museum and Library in one of the Public buildings at Colombo, and a pecuniary grant-in-aid of its funds, the Society considers this a fitting occasion for appealing to the Members of the different Services, and to the public at large, for their co-operation in promoting the practical utility of this Institution.

That end, it is apprehended, will be best accomplished, not only by uniting in one Museum at Colombo objects of every description calculated to illustrate the Natural History, the Geology, Mineralogy, Botany, Industrial resources, capabilities and Arts of the Island, but by interesting the Members of the Civil, Medical and Railway Departments, the Officers of Her Majesty's Army and Navy, and the gentlemen engaged in Commercial and Planting pursuits, in contributing such Statistical, Meteorological, Topographical, Historical, and other information as they may be able to collect; and in contributing, from time to time, original Papers to be publicly read at the Meetings of the Society.

The extensive works now in progress for facilitating internal communication, especially the completion of the Telegraph and construction of the Railway, are opening up, daily, new sources of information throughout the Colony, and the organization which already exists in every Government Department including the Mudaliyars, Raṭémahatmayás and other Native Headmen, affords the ready means, if well worked, of enabling, as it is hoped, this Institution to become, as the depositary of, and as the agent for, diffusing much valuable local information, an active promoter of the public good.

The Society therefore takes this opportunity of informing all who may feel inclined to aid in caryying out the above mentioned objects, that by the liberality of the Government, all Papers and other objects, not too large for the convenience of the tappal, will be conveyed free of expense when addressed to the Secretary of the Society, and enclosed to the Colonial Secretary, Colombo.

Articles of greater bulk, addressed in a similar manner, may be transmitted, alike free of expense, by the "Pearl" Steamer, from any part of the Coast at which she may touch.

JOHN CAPPER,
*Hon. Secy.*

---

## HEADS OF ENQUIRY ON SUBJECTS SUITABLE FOR THE ASIATIC SOCIETY.

*Agriculture.*—Nature of Soil. Variety of Crops, and number in the year. Period of Land lying fallow. Use of Manures, and description. Irrigation. Agricultural Implements, whether improved or not. New Products raised. Proportion of inhabitants engaged in Agricultural pursuits. Produce if consumed in the District or sent to other markets. Cattle employed in. Description of Cattle reared, and if on the increase: Health and Disease of. Local value of Agricultural Produce and Cattle. If Crops have increased of late. Causes influencing ditto.

*Manufactures.*—If any, and their nature. Articles made; their value on the spot. Whether improvements have taken place in them. If on the increase.

*Trade.*—If any Export Trade exists in the District, in what articles, and to what extent.

*Social Habits and Condition of the People.*—If their condition be improved materially or otherwise, and from what causes. State of Education and Crime. Schools, and of what character; Attendance of Pupils, if on the increase. State of Vernacular education. What books used, and what children attend the Schools. Age at which Marriages take place.

*General Statistics.*—Population if on the increase or otherwise. Causes affecting it. Of what Races composed. General Health, and average Duration of life in the District. Prevailing diseases, number of thatched and tiled houses.

*Natural Products.*—An examination of such Natural Products as exist in the District, distinguishing those well known and in common use from those but little known.

*Antiquities.*—Notices of Ruins of Temples, Public Buildings, Tanks, Water-courses, or ancient Inscriptions in the vicinity, with any traditional accounts relating to them.

*Objects Suitable for the Society's Museum.*

*Birds, Reptiles, Animals, and Fishes,* unless they could be properly preserved for transmission, are not amongst those objects recommended for collection. The Society, however, are willing to supply Arsenical Soap and Camphor to any collectors willing and able to undertake the preservation of objects illustrative of the Natural History of the Island: and, when practicable, glass jars and spirits for the reception of Reptiles or Fishes.

*Geological and Mineralogical specimens* are readily procurable, and always acceptable. Also, *Fossils and Corals* from the Northern Peninsula; *Marine Shells* from the Eastern and North-Western Coasts; and *Land Shells* from all parts of the Island.

*Raw Products* are to be met with everywhere, and to these attention is more particularly directed. Grains, Seeds, Vegetables, Fruits, Gums, Resins, Dye-Stuff and Woods, Oils, Fibres, Barks, Timber, &c., &c. Their abundance, value, locality, &c., &c.

*Manufactures* of every kind, with *Models* of the Machines or Implements employed; and a memorandum of the quantities yearly produced, and their local value.

## CORRESPONDENCE CONCERNING THE MAURITIUS EXHIBITION.

*Circular.*

*Colonial Secretary's Office,*
*Colombo*, 17th June, 1859.

Sir,—I am directed to transmit to you for distribution, six copies of a Prospectus of an Inter-Colonial Industrial Exhibition, to be held at Mauritius, on the 31st August next, and two following days, under the patronage of the Governor of that Colony, together with copies (6) of the Regulations for the guidance of contributors.

I have, &c.,
(Signed) James Swan.

The Honorary Secretary to the Royal Asiatic Society.

*Port Louis*, 10th April, 1859.

Sir,—It being the intention of the Royal Society of Arts and Sciences to hold an Industrial Exhibition this year, of which His Excellency the Governor has consented to be Patron, and to invite the Sister Colonies of the Cape, Ceylon and Reunion, to enter into friendly rivalry with Mauritius and each other on this occasion, I am directed

by the Committee of Management to forward to you (herewith enclosed) 200 copies of the Prospectus, with the request, that you will have the goodness to transmit them to the Governments of the above mentioned Colonies, with a view to their being distributed there amongst those persons who are most likely to take an interest in and support our undertaking.

You are requested also to make it generally known to these Governments, that all expenses on account of freight and duties, (live animals excepted,) will be defrayed by the Society of Arts and Sciences, and that the following Regulations must be strictly attended to by the contributors :—

1st.—All articles intended for the Exhibition are to be expedited, so as to arrive here before the 15th of August, 1859.

2nd.—The cases to be addressed as follows:—
To the Committee of Management of the Industrial Exhibition, Government House, Mauritius.

3rd.—Each case must contain an accurate list of its contents, together with their uses (if necessary) to be signed by the Contributor. A duplicate of such list to be forwarded by Post, addressed as above.

4th.—In the event of the Contributor desiring to dispose of one or more of the Articles exhibited, the sale price of the same to be written on the List.

5th.—All articles either not sold, or for the disposal of which in Mauritius no specific directions shall have been given, will be returned to the Colony from whence they came, free of expense.

I have, &c.,
(Signed) W. W. R. Kerr,
*President of the Committee.*

To the Hon'ble the Colonial Secretary.

---

## CORRESPONDENCE WITH THE SOCIEY OF ARTS.

*Circular.* *Downing Street,* January 6th, 1859.

Sir,—I transmit to you enclosed copies of a correspondence which has passed between the Society of Arts, relating to the expediency of discriminating accurate statements of the resources of the Colonies, and of the bearing of such resources upon Trade.

You will perceive that, in the judgment of the Society, that object may best be accomplished by stimulating some competent persons or existing Societies in the several Colonies, to place themselves in

communication with the Society, in order to arrive at a full understanding of the points upon which it may be considered that the mother-country is not now sufficiently informed.

I have earnestly to request, that you will use all the means within your power to promote the views of the Society of Arts, and favour me, if necessary, with any suggestions which you, or other competent persons, may consider better calculated to aid the full development of those views.

I have, &c.,
(Signed) E. B. LYTTON.

Governor Sir H. G. WARD, &c., Ceylon.

---

SOCIETY OF ARTS, MANUFACTURES, AND COMMERCE.

*Adelphi, London*, July, 1858.

SIR,—I am directed by the Council of this Society, to bring before your notice the desirableness of obtaining periodically from the more important of our Colonies, accurate statements of their resources, and the bearing such resources may have upon commerce. This Society has always taken a deep interest in the welfare of the Colonies, and if the information sought was obtained, the Council would propose to hold periodical meetings of this Society to discuss it, devoting, say one meeting to each Colony, and publishing accounts of such meetings in the Society's Journal, which is issued weekly, and distributed without charge among the Members, upwards of two thousand in number.

The Council conceive that such information would be reciprocally useful to the Colonies and to this Council, and that much useful knowledge for commercial purposes would be then circulated, which would be otherwise likely to remain dormant.

The Council direct me respectfully to request, if you should approve of what is proposed, that the Colonial Office may forward to the Governors of the Colonies, letters from the Council of this Society, with a recommendation to the Governors to give effect to the wishes of the Council. The Council, in addressing the Governors of Colonies, would request them to ascertain what competent persons in each Colony would be willing to furnish such a report as is suggested, and to put him in direct communication with the Society.

I have, &c.,
(Signed) P. LE NEVE FOSTER,
*Secretary.*

To the Right Hon'ble Sir EDWARD BULWER LYTTON, BART, M.P., one of Her Majesty's Principal Secretaries of State, Colonial Office, Downing Street.

*Downing Street*, 29th July, 1858.

Sir,—I am directed by Secretary Sir E. B. Lytton, to acknowledge the receipt of your letter, in which you bring under his notice, by direction of the Council of the Society of Arts, the desirableness of obtaining, periodically, from the more important of the Colonies, accurate statements of their resources, and of the bearing which such resources may have upon Commerce, and state the mode in which the Council would propose to obtain such information, and to make it reciprocally useful to the Colonies and to the Society.

I am to request, that you will acquaint the Council of the Society of Arts, that it is Sir E. B. Lytton's wish to aid their project to the fullest extent of his power. But he fears that in most of the Colonies, the Society is at present too developed to allow of individuals, or public bodies being found, who could effectually correspond with the Council on the topics proposed. The Council are also, no doubt, fully aware that the Secretary of State cannot require the dedication of any public funds in the Colonies to this purpose. Subject, however, to these observations, Sir Edward will readily act in the matter as the Council may wish, and will be prepared to transmit to the several Colonial Governors (with the necessary recommendation on his part) such papers as the Council may furnish him for this purpose.

I am, &c.,
(Signed) Carnarvon.

P. Le Neve Foster, Esq.,
*Society of Arts, Adelphi.*

---

Society for the Encouragement of Arts, Manufactures, and Commerce.

*Adelphi, London*, W.C., January 1st, 1859.

My Lord,—I am directed by the Council of the Society of Arts to acknowledge the receipt of your letter of the 29th July, and to request that your Lordship will thank Sir Edward Bulwer Lytton, on the part of the Society, for the ready assent he has given to the request contained in my former letter, that he would be good enough to transmit to the Governors of the several British Colonies the proposals which have been under consideration, to make use of the Society to diffuse information as to the resources and products of the several British Colonies.

The Council consider, that the best measures for attaining the object they have in view, will be the following :—

1.—That such Colonies as consider that the meetings and proceedings of the Society of Arts would at all serve to give publicity to their

resources, and tend to increase the demand for their productions, should select some competent person, or existing Society in the Colony, to frame a complete statement of the points upon which it is considered that the public of the mother-country are not sufficiently informed.

2.—That the individual or public body thus selected, should at once be put in direct communication with the Society of Arts.

3.—That the person or persons thus chosen should also designate, and obtain the consent of, some well-informed person in this country, either himself to read, at an evening meeting of the Society, the paper prepared in the Colony, or to confer with the Council as to the best method of securing their common objects.

Further proceedings may be later indicated, or may arise from the steps proposed.

Should any Colony consider that a different course of proceeding would better suit the peculiar circumstances of that Colony, the Society of Arts will be quite prepared to receive such suggestions.

I have, &c.,
(Signed) P. Le Neve Foster,
*Secretary.*

To the Earl of Carnarvon, &c., Her Majesty's Under Secretary of State for the Colonies.

18 JUN. 1903
BRITISH MUSEUM NATURAL HISTORY

# JOURNAL

OF THE

# CEYLON BRANCH

OF THE

# ROYAL ASIATIC SOCIETY,

## 1860-61.

## VOLUME III.

No 12.

*EDITED BY THE HONORARY SECRETARY.*

"THE DESIGN OF THE SOCIETY IS TO INSTITUTE AND PROMOTE ENQUIRIES INTO THE HISTORY, RELIGION, LITERATURE, ARTS, AND SOCIAL CONDITION OF THE PRESENT AND FORMER INHABITANTS OF THE ISLAND, WITH ITS GEOLOGY, MINEROLOGY, ITS CLIMATE AND METEOROLOGY, ITS BOTANY AND ZOOLOGY."

BRITISH MUSEUM NATURAL HISTORY

COLOMBO:
PRINTED AT THE "CEYLON OBSERVER" PRESS.
1894.

# JOURNAL

OF THE

# CEYLON BRANCH

OF THE

# ROYAL ASIATIC SOCIETY,

## 1860-61.

## VOLUME III.

BRITISH MUSEUM

No. 12.

*EDITED BY THE HONORARY SECRETARY.*

"THE DESIGN OF THE SOCIETY IS TO INSTITUTE AND PROMOTE ENQUIRIES INTO THE HISTORY, RELIGION, LITERATURE, ARTS, AND SOCIAL CONDITION OF THE PRESENT AND FORMER INHABITANTS OF THE ISLAND, WITH ITS GEOLOGY, MINEROLOGY, ITS CLIMATE AND METEOROLOGY, ITS BOTANY AND ZOOLOGY."

COLOMBO:
PRINTED AT THE "CEYLON OBSERVER" PRESS.
1894.

## CONTENTS.


| | PAGE. |
|---|---|
| Health and Disease in Ceylon.—By BOYD MOSS, Esq., F.R.C.S. ... ... ... ... | 361 |
| Cinnamon.—By JAMES D'ALWIS, Esq. ... ... | 372 |
| Notes on the District of Badulla and its Natural Products.—By W. C. ONDATJIE, Esq., Assistant Colonial Surgeon ... ... ... | 381 |
| The Difference between the Páli and the Prákrit-Mágadhì of Vararuchi.—By JAMES D'ALWIS, Assistant Secretary ... ... ... | 429 |
| On Health and Diet, with especial reference to Children and Youths in Ceylon.—By BARCROFT BOAKE, B.A., Vice-President, Asiatic Society, Ceylon ... ... ... ... | 434 |
| APPENDIX :—Proceedings of Meetings, &c. ... | i |
| Letters from Sir J. E. Tennent and Dr. Buist to the *Athenæum*, relative to the Fresh Water Wells of Jaffna ... | xi |

# ROYAL ASIATIC SOCIETY, CEYLON BRANCH.

## HEALTH AND DISEASE IN CEYLON,

By Boyd Moss, Esq., F.R.C.S.

Opinions vary much concerning the healthiness of the climate of the Island of Ceylon, many considering that good health is quite incompatible with a prolonged residence here, and it is with a view to enquiry concerning the truth of this supposition, that I have written the few following pages, hoping that they may possibly be of some eventual service to my fellow-countrymen.

There have been, of late, many melancholy deaths among us,—friends taken away whom we have seen in apparently perfect health but a few days before; and it is a question of great moment and interest whether this fatality is an unavoidable result of a residence in this climate, or whether it can be proved that the increased mortality in this, over more temperate regions, is owing to some fault in our manner of life, or to our own carelessness and neglect of ordinary precautions in avoiding the causes of disease.

Now, I do not hesitate to express an opinion that we may, with ordinary care, pass many years in this Island, without more cause, or with very little more cause, for serious complaints, than in England. I believe that a decrease of bodily vigour, shewing itself in more or less disinclination to exertion, is the only unavoidable result of a residence here, and even this applies only to some parts of the Island, where we find

the atmosphere at the same time hot and loaded with moisture, a combination which is always especially relaxing to the constitution.

Of course sportsmen and others whose occupation leads them to unhealthy districts, must expect to be liable to fever; but any one sleeping in a tent night after night among the marshes of Essex, or the fens of Lincolnshire, would be equally so. Medical men do not meet with half the diseases in this Island which they are accustomed to see in England, and the most common complaints occurring here viz., fever and dysentery, are generally so easily cured, when properly treated at their commencement, that I cannot but conclude, that to self-neglect is to be attributed a very large proportion of the deaths among our countrymen in Ceylon.

There is, however, another cause, and I fear a nearly equally great cause of mortality among the adult male portion of the community. I allude to the far greater indulgence in spirituous liquors which obtains here among young men, over what the same class are accustomed to in England. I am sure that any one, on recalling the deaths among male Europeans which have taken place within his memory, will at once admit the truth of this assertion, that drink has had, directly or indirectly, a large share in the mortality. The constitution becomes undermined by the constant indulgence in this habit, and is unable to resist the attack of what might otherwise have been a trifling complaint. I believe that the custom of taking spirits and water regularly twice a day, on board ship on the voyage out from home, is one great cause of this; and when we consider the solitary life often led by Planters on Coffee Estates, it is hardly to be wondered at that the habit thus acquired should be difficult to break through.

I believe that the mode of diet of Europeans in India generally, is very much against a continuance of good health: and here I feel that I am entering on a subject which must necessarily meet with some opposition; for there are few

tasks more difficult than that of convincing people that they are wrong in habits, which time and custom have led them to consider as necessary to their existence.

Now, there is no greater error than an idea, which is by no means an uncommon one, that we need a larger supply of animal food in hot climates, than in temperate ones. The reverse is the truth, and there is no better proof of this than in the fact, that we continually see people obliged to have recourse to bitters, before they can induce an appetite to enable them to consume their food, nature evidently resisting this overloading of the system with an unnecessary amount of nourishment. Why is it that we fancy hot curries, chutnee, and stimulants of a similar kind? Not, as I shall presently endeavour to shew, because they are the natural or necessary food of a hot country, but because we find again the stimulus of the chillies and spices necessary to enable us to get through the meal; the stomach becoming thereby incited to attempt to digest more food than is good for it. I really believe, that eating in India is very frequently, or I should say very generally, more a means of passing time than a necessity, and that in proportion as we are enabled to take a larger amount of bodily exercise, we shall find the taste for stimulants of the curry kind diminish. More occupation for the mind, and increased means of amusement, so often wanting in English societies in India, would probably conduce to the same effect.

Many will answer my arguments, by saying that Providence has suited the food of different countries to their inhabitants, and that we, as inhabitants of India, cannot err in following the manner of living, and the diet of the natives.

Now this results from an extremely superficial view of the matter, for, with few exceptions, the food of any nation depends, not on the climate, but on the state of civilization of that nation. Providence has provided suitable food for the lower animals, because they are not gifted with reasoning powers, but merely with instinct, that is, with a faculty

which is incapable of further development ; therefore it was necessary that their instinct should guide them at once to the description of food which is exactly suited to their wants. But on man a mind has been bestowed, which he is expected to make use of in bettering his own condition and that of his fellow-creatures, and thus we see, that as a nation passes from a savage to a civilized state, that not only the arts and sciences, but the general manner of living and feeding, pass through progressive stages of development.

There is one exception perhaps to this law, in the case of the inhabitants of the Polar regions ; but it is an exception that goes to prove the rule, for these countries, from the nature of their climate, may perhaps be said to be incapable of change or improvement, and their inhabitants are so far placed on a level with the lower animals, for the only food which they can obtain is such as is best suited to sustain life and bodily heat ; and we find their taste, consequently, directed to such food as train oil and blubber, without which they would be unable to maintain a healthy existence in the intense cold of the Arctic regions.

Therefore I say, that the exception in the case of these people, helps to prove the general rule, that we must not be guided in our choice of food, in most countries, by the present diet of their inhabitants. The climate of the Polar regions is such that, in all probability, no great progress can ever be made in their state of civilization, and consequently, we see that Providence has given them an inclination to a description of food exactly suited to their wants.

Now, the climate and soil of all other countries, admit of more or less application of the progressive improvements in agricultural science, therefore, though in the uncivilized state of some nations, we may find them existing, in one case on raw or putrid fish, as on some parts of the West Coast of Africa ; or, in another case, consuming for food their own species, as among cannibals ; we are not, if our lot happens to be cast in these countries, to consider it best for our health to follow

the example of the natives, but we should follow the suggestions of our own more advanced state of civilization.

We now return to the question of the propriety of the ordinary diet of Europeans in India. We find among the natives a very general use of hot spices, chillies, and such stimulants; but what encouragement does their condition present to us, to imitate them? We see them, for the most part, a weak and indolent race, disinclined to the least extra exertion, and when attacked by disease, much sooner succumbing to it than Europeans. They are, occasionally, perhaps induced to exert themselves under the hope of a reward, but then, though a casual observer might think them capable of enduring a large amount of fatigue, they will generally be found to suffer from it afterwards.

These remarks of course apply principally to the working classes, who form, I imagine, at least nine-tenths of the population of India,—and these, it must be admitted, frequently suffer much from insufficient or bad food; but still their boiled rice, with even a very small quantity of vegetable or fish, contains fully as much nourishment as the potatoes on which the poorer class of Irish, in many cases, almost entirely subsist; and yet an Irishman will, I will venture to say, do three times the amount of work in a day, that can be got out of a cooly, or a Siṇhalese workman.

To this some, perhaps, will say, but what amount of work would the Irishman do on a Coffee Estate under a hot sun? My reply would be, put them both under similar conditions, that is, the Irishman under a hot sun in India, and set the cooly to work in Ireland in the winter, and I think it would then be found that the Irishman would still do three times as much work as the native of India.

Now, I think that the deduction from this must be, that there is something in the food of the natives here that interferes with the proper digestion and distribution of the actual amount of nourishment which they consume; and I can imagine nothing better calculated to effect this, than

a continual stimulation of the digestive organs by hot pepper, spices, &c., especially when we consider the constitutional change which is always effected by habits of any kind, continued from generation to generation.

With regard to the use of a meat diet by inhabitants of hot countries, we find that there is very often some provision in the laws of their religion, which tends to diminish the supply of animal food. Thus, among the Hindús the cow is sacred, among the Jews the pig is forbidden as food, and the Siṇhalese are not, or were not, permitted to eat beef. Now we find no such laws among the inhabitants of cold climates, and may, I think, reasonably conclude, that these ordinances, like some other religious ceremonies among Mohammedans, were originally instituted for the health of the people; who, otherwise, from the elementary state of knowledge at the earlier periods of the world, might have committed excesses, which in time would have produced the degeneration and eventual destruction of the race.

The medical science, however, of the present day, explains why one particular diet should be suited to a hot, and another to a cold country. Respiration serves two principal purposes in the human body, it purifies our blood by carrying off from it a substance called carbon, in the form of carbonic acid gas, and at the same time maintains, by a chemical process, the natural heat of the body. Now respiration is quicker in a cold climate or in cold weather than in a hot climate, that is, in a given time we perform a greater number of inspirations and expirations in cold weather than in hot. Now, although in a hot climate there is less work for the lungs in maintaining the temperature of the body, as that of the surrounding atmosphere is so great, still the purification of the blood requires to be carried on; and so, if we still introduce as much carbon into the system in the shape of food, we shall find that as the lungs do not act so frequently, the carbon must accumulate in the blood, or be got rid of by some other means; now this other means of disposing of it is through the liver, which thus has an extra amount

of work thrown on it, and disease is produced unless we adopt one of two courses. We must either increase the action of the lungs, which we may do by active exercise, or we must decrease the amount of food, especially those articles of food which contain most carbon, such as rich and fat meats and spirituous liquors. This fact is well-known by those who supply the unfortunate geese, whose livers make the celebrated *patés de foie gras.* They treat them exactly as many of us treat ourselves in India. They are confined in a hot atmosphere, allowed to take no exercise, and crammed with quantities of rich food. Many, no doubt, are aware of this, and never think of applying it to their own case. I have heard the same person at one moment expressing an opinion that we required here a large amount of animal food to keep up our strength, and, shortly after, dilating on the impropriety of feeding dogs on meat in a hot climate, as it would inevitably kill them.

I will now endeavour to point out by what means, in my opinion, we may best preserve our health in this country. The first thing, without doubt, is a sufficiency of bodily exercise, riding or walking—especially the latter; the best time for this being the early morning; it is within the power of all of us to obtain this. Cold bathing I need hardly mention, as it is a thing few or none of us neglect; but the time at which we should bathe is of some consequence, the best time being in the morning, immediately after the ride or walk,—always before a meal, never soon after: the fact of being warm from active exertions offers no objection to the use of the cold bath, that is, we may without danger go under a spout of cold water in a state of active perspiration from violent exercise. The only reason for avoiding sudden immersion in cold water, is, where we are exhausted from fatigue, and the temperature of the body is fast cooling down. Avoid as much as possible exposure to the sun, never going out in the heat of the day without an umbrella, or a board-brimmed pith hat. It is by no means uncommon to see Europeans in Ceylon, with nothing on their heads

but a Glengarry bonnet, or a small cloth cap, under a burning sun. The wearer, in these cases, can only expect what he deserves, a sun stroke or disease of the liver.

Endeavour as much as possible to avoid a stimulating diet, and heavy late meals, and observe moderation in, not abstinence from, wine, beer, and spirituous liquors. It is almost useless to say anything against late dinners, as the occupation of most people is such as to prevent any alteration in the time at which they take their meals. It is one of the evils inseparable from a state of high civilization, that health is continually sacrificed to temporary advantage; and the more successful that a man is in his business, the less successful he will probably be in the preservation of his health. The quality of our food, however, is nearly always under our control. We are seldom forced to eat what does not agree with us, and, I believe, that if we partook of animal food once only during the day, it would be the better for us; and we should avoid highly-spiced and rich fat dishes; in fact, nature as plainly as possible seconds this advice, for we find the animals of the country peculiarly destitute of fat, while the same animals in cold countries, are, when in a state of health, loaded with it. As far as they themselves are concerned, this is, of course, also a provision of nature dependent on temperature of climate.

Children here are sometimes most improperly fed; I have seen them literally crammed twice or three times a day with meat and curries, to say nothing of little interludes in the shape of biscuits, plantains, &c., the anxious parent all the while wondering why they look so pale, and of course throwing all the blame on the unfortunate climate. It never occurs to her for a moment that the children's digestive organs might possibly be the better for an occasional ten minutes rest; it is not to be wondered at that they have to be sent home after a year or two of this treatment. Children in this climate should most certainly

eat meat but once in the day, and curries I look upon as slow poison to them, unless they are made without most of the usual constituents of a curry.

I have already said that the diseases of most common occurrence in Ceylon, are, if properly attended to at their commencement, generally very easily cured; at the same time complaints which in England would be considered trifling, and might be often neglected without ultimate injury, will not bear the same neglect here, and may soon become serious and permanent. Therefore, we should always apply for medical aid at the first intimation of any departure from our ordinary state of health. Avoid quack medicines and popular remedies, such as "Cholera Drops," the virtues or rather vices of these latter, always depending on the presence of laudanum or opium in some form, which in my opinion is poison in genuine Cholera, and hardly ever necessary, but on the contrary hurtful, in ordinary bowel complaints among Europeans. Any remedy, too, containing opium, is especially objectionable in unprofessional hands, as a medicine for children. A child of nine months old has been killed by four drops of laudanum, and one of four and-a-half years by one-third of a grain of opium; in another case, a drop and-a-half of laudanum proved fatal to an infant, and yet I have seen printed directions in this country for the cure of Dysentery, recommending indefinite doses of "Dover's powder," which contains opium, without any such warning concerning children as that I have just given.

I have noticed a rather prevalent habit among our countrymen in the Island, of taking quinine whenever they fancy themselves to be what they call feverish. Now, although this may do no particular harm, yet it can hardly ever be productive of much good, and may interfere with the proper action of the medicine when it is really required. There is only one case, I think, where quinine is likely to be of service when taken without medical advice, and this is when we are obliged to pass a short time in a

part of the country particularly subject to fevers, and then three or four grains of quinine taken in coffee in the morning will, I believe, give us a very good chance of escaping an attack. This medicine, in skilful hands, is to fever as water is to fire, but when given at improper times, or in insufficient doses, it is generally worse than useless. Change of air is another remedy of great benefit to invalids, but is often much abused and misunderstood. A sea voyage is, unless peculiar circumstances forbid it, generally the best change from this climate ; not to the coast of India, or any place still hotter than Ceylon ; such a change can seldom be of any use. A trip by sailing vessel to Mauritius, Australia, or the Cape, will generally be the best ; and the worst of all changes, unless the person is convalescent, and able to bear much fatigue, I consider to be the Overland Journey home. It is astonishing, after the numerous deaths that have occurred among invalids on this route, that any medical men should still be found to advise their patients to risk their lives by such a proceeding. The journey is most fatiguing to any one, and doubly so to an invalid. I can only conceive one circumstance which can justify the adoption of the Overland Journey by a person seriously ill, and that is when recovery is impossible, and the patient has a wish, at any risk, to die among his or her friends at home. Of course, there are instances where a permanent cure is best effected by the change to the climate of Europe, but the sick person should at any rate possess a sufficiency of strength and convalescence, to enable him to bear the excitement and fatigue of the journey ; and if this cannot be brought about by proper medical attention here, I fear it must very frequently happen that the patient will not reach home alive. It is seldom, perhaps, that medical attendance is to be had on a voyage hence to Australia or round the Cape ; but I really believe, that in nine cases out of ten, the patient in this case would have a better chance without a Doctor, than on the Overland Journey with a dozen.

A few words in conclusion, on the change of locality, to be obtained by invalids within the Island. To those living in the interior, a visit to Colombo will, in nearly all cases prove, except during the hottest months, a most salutary change. I believe, however, the advantage of Nuwara Eliya as a sanitary station to be rather overrated. I cannot speak from personal observation, but from the description of others, it is apparently excessively damp; and the great range of temperature during the twenty-four hours, from actual frost at night, to tropical heat during the day, leads me to think that there are many places, at a lower elevation, far more generally adapted as a residence for invalids. Of all parts of the Island which I have as yet visited, the Kelebokka Valley is certainly that to which I should be inclined to send any patient of mine, to whom a change from the low country was necessary. I have seen the thermometer there down to 49° in the early part of the year, a temperature sufficiently low for invalids who have probably been residing in an atmosphere, where the thermometer seldom stood below 70°.

Change for the mind is, however, often nearly as efficacious in producing a return to health, as change of locality; and it is for this reason that I am inclined to think highly of Mauritius, as we may there obtain those social amusements in which our Island is unfortunately so deficient, and which I feel sure form no unimportant element in the preservation of health in this climate, where, as I have before said, almost the sole amusements to which many can look forward after the labours of the day, are the pleasures of the table.

# CINNAMON.

By James D'Alwis, Esq.

Considerable doubt was, sometime ago, raised by Sir James Emerson Tennent,* as to the opinion generally entertained by Botanists and Historians,—that "the Cinnamon plant is indigenous to Ceylon." During the prosecution of his inquiries upon the matter, my attention was invited to the subject; and the result of my investigations is embodied in the following extracts of a letter which I addressed to him, and which, from the peculiar interest which attaches to the question in a historical point of view, I beg to lay before this Society.

If Cinnamon (*Laurus Cinnamonun*, Lin. *Cinnamomum Zeylanicum*, Nees.) were introduced into Ceylon from the neighbouring Continents of Asia and Africa, it is but reasonable to expect that it is still to be found in them. It is not a little curious, however, that no Cinnamon grows in the latter—at least in the vicinity of *Abyssinia*, which is described by travellers as possessing a soil anything but favorable to the growth of Cinnamon.† It is also, I believe, a fact, that during the Dutch Government in Ceylon, Java was not considered to produce either Cinnamon‡ or Cassia, though, doubtless, the latter was found in a wild state;

* He has embodied the result of his researches in his "History of Ceylon," vol. I. p. 599, *et seq.*

† Speaking of "the Eastern Coast of Africa to the unknown regions," Laurent, in his *Ancient Geography*, describes it as "those parched lands over which Arabs roved in former days as in the present."—p. 348.

‡ In the year 1827, twenty-five boxes of Cinnamon plants, besides a considerable quantity of seeds, were introduced into Batavia, *smuggled from Ceylon*, by an agent in the service of the Dutch Government.—See *Asiatic Journal*, 1827, vol. xvi. pp. 282-3.

and it is generally believed that all the Cassia which is exported from Malabar, Java, and even China, is the produce of trees cultivated in those countries within the last half-century. Buchanan, in his "Account of Mysore," (vol. II. p. 512, &c.,) thinks the spice grown in the Continent to be "without doubt the *Laurus Cassia* of Linnæus."* Even under the Portuguese Government, we learn from Ribeiro (Lee's Translation, p. 141,) attempts were made to improve the quality of the spice grown at Quilon, and in the forests of Porca; but none could be made to compete with that of Ceylon in taste or in fragrance: and you will find that Lee also quotes from Lord Bacon, to shew that half a century earlier than Ribeiro, Cassia was used as a substitute for Cinnamon.†

It is not a little remarkable that Colebrooke in his *Amara kósha*, and Professor H. H. Wilson in his Sanskrit Dictionary, give "woody Cassia" as the signification of the Sanskrit terms "*twak-pattra, mutkatan, brungan, twachan, chóchan, varángakan*;" which are synonymous terms. I observe too, from your remarks to me, that the result of your reading also tends to the same conclusion—that what the Arabian and the Persian ships produced in ancient times on their return from India, was *Cassia* and not Cinnamon. These are considerations which lead me to believe, that I am correct in representing Ceylon as the only country‡ which

---

* In Arian's history of Alexander, although Cinnamon is mentioned as "the produce of a shrub," yet of *Cassia* alone it is stated that it "grew there" (in India)—vol. ii. p. 166.

† "*Nard* and *Cassia* balmy smells."—*Milton.*
"Let balm and *Cassia* send their scent
From out thy maiden monument."—
Herrick's "*Dirge of Jephtha.*"

‡ "The Java Cinnamon is far superior to the Malabar both in quality and appearance, but is not so handsome in the bale as that of Tellicherry, which is always well packed and with clean joints, whilst that from Java is mixed with many false packed canes and ragged joints, and has a stronger drug flavour. *Ceylon is superior in every point of view (colour excepted) to every other description of Cinnamon.* It is perfect in its fine aromatic flavour, in the thinness and regularity of its bark, the length and cleanness of the joints in each cane, &c., &c. Java Cinnamon has made the nearest approach to the qualifications of Ceylon Cinnamon,

produces "Sweet Cinnamon," (*pęni kurundu*, Siṉ.), contradistinguished from "Cassia," (*nika kurundu*, Siṉ.)* If this be so, and I may regard it as a well ascertained fact in natural history, that "each tract of country in the world has had its own peculiar creation," the inference that Cinnamon had its origin in Ceylon, is, I conceive, very probable.† It is doubtless from this cause that this spice is so regarded by several writers—that poets have sung of "spicy breezes" in connection with "Ceylon's Isle;" and that the Island itself is termed "*The Cinnamon Isle.*"

Its claims to this designation seems to derive great support from a Sanskrit "Catalogue of Botanical names," called the *Saraswati Nighaṇḍuva*, a production of very remote antiquity, in which, among other designations, *Saiṉhalan* occurs as a name for Cinnamon.‡ I find from Wilson's "Sanskrit Dictionary," that this name (in a modified form, *Siṉhalá*) is given to Cinnamon even in India—a fact which removes all doubt as to the genuineness of the application, and the origin of the article.

Now, when we bear in mind that nearly all names

---

although it is still a very inferior substitute; it is much weaker in flavour and lacks that fine aroma which is the leading feature in the quality of Ceylon Cinnamon. It is besides very inferior in the quilling."—*Report of Messrs. Kilby and Co., Brokers, London, October, 1843.*

* Baldæus, in his account of Ceylon, describes *Cassia* as the third sort of Cinnamon, called by the Portuguese *Canel de mattu*, or 'wild Cinnamon,' which grows likewise on the Coast of Malabar, but is in no esteem. —*Ancient Travels*, p. 824.

† Speaking of 'centres of creation,' Dr. Gardner says, (see Lee's Translation of Rebeiro's Ceylon) that "till the natural productions of different parts of the surface of the globe came to be investigated with the attention and accuracy which are peculiar to the present age, naturalists rested satisfied with the vague idea that all animals and vegetables had originally radiated from a common centre, and that in the same parallels of latitude the same species would be found. This we now know not to be the case; and it can be as safely asserted that every large tract of country has had its own peculiar creation of both plants and animals, as that two and two make four, the exceptions to this general rule being accounted for by disseminating causes now in operation."—p. 211.

‡ It also occurs in another botanical work called the *Siddhāwausadha Nighaṇḍuwa.*

throughout the East are descriptive,* and that this, which is a possessive noun, bears the signification of "that which belongs to the *Siṇhalese*," I am disposed to treat it as a plant indigenous to Ceylon.†

The objections, however, to this are two-fold; 1st, that although so early as in the days of Moses, "Sweet Cinnamon" and "Cassia" were known, (Exod. xxx. 23, 24,) ‡ yet it is not mentioned as a product of Ceylon until after the Muhammadans commenced a traffic in the Indian seas; and 2ndly, that the "Cinnamon regio" of the ancients is described as the *opposite* or *Eastern Coast of Africa*.

For obvious reasons I feel a very great diffidence in advancing an opinion upon this part of the subject, and would therefore merely suggest for your consideration whether the non-mention of Cinnamon until after the Muhammadans had commenced to trade with Ceylon, may not fairly be attributed to causes § other than the absence

* Thus, *tippilli* or 'long-pepper,' goes by the name of *Maghada* (Behar) the country where it was originally found. So likewise *Chīnamul* 'caculia cathertica' or *China-root* is so called after the name of the country from whence it was introduced into Ceylon.

† With less evidence in its favour, Dr. Gardener would have us believe, that the coconut palm is indigenous to Ceylon.—Lee's *Ribeiro*, p. 213.

‡ Dr. Royle, having indicated the routes af ancient commerce, concludes this part of his subject with some remarks on the place whence the articles were brought into Egypt and Palestine; and he says: "But Cinnamon and Cassia, nard, calamus, and onycha having been shewn to be peculiar Indian products, known to ancient commerce—there can, I conceive, be no doubt that the *West Coast of India*, and probably also the Island of *Ceylon*, were reached eyen in the early time." See *Asiatic Journal*, vol. xxxviii. p. 156. As between India and Ceylon, we have already shewn that *Cinnamon* was a peculiar product of the latter country.

§ It may appear strange that so few of the indigenous productions of Ceylon itself are mentioned; that is to say, only precious stones and pearls, without a single allusion to cinnamon and ivory, with which the Island abounds. This apparent inconsistency, however, is removed when we come to consider the very nature of the Siṇhalese commerce; and at the same time serves to shew the vast extent and importance of the latter. For, as we have already seen, the trade of Ceylon consisted for the most part in the exchange of foreign goods, brought thither in great quantities from distant regions; in comparison with which the sole produce of the Island itself, would seem very trifling and insignificant. Besides, cinnamon grew only in the interior, and not in the northern parts of the Island, to which alone Sopater's visit was confined; and we

of the article itself in Ceylon, viz., to a deceit practised by the Chinese, who seem to have had before that period a monopoly of trade in the Indian Seas. It is also important to investigate with clearness, whether by "the Eastern Coast of Africa," a part of Asia* was not meant ; or whether the former was at this time a port at which the Chinese vessels touched, and from whence the spice itself was exported to other ports in exchange for European and Egyptian merchandize. The great value too, which was set on this article may seem to have influenced the Chinese, like the Arabs who traded in the Red Sea, to withhold the name of the country from whence they obtained it† and, it may not be improbable, on the other hand, (if the Chinese did not conceal the fact,) that the Greek writers took for granted without much inquiry, that the spice, which they procured from the East Coast of Africa, was a product of those regions.‡

The inaccuracies into which the ancient writers seem to have fallen with regard to the Geography of the Eastern Coast of Africa, and the opposite regions in Asia, may also intimate to us such a want of information in the Greek writers, as to render a mistake on their part possible, and indeed too probable ; for, amongst a great many errors

---

must also recollect, that at this early period, gardens appropriated to the cultivation of cinnamon were not yet in existence."—Heeren's *Historical Researches*, ii. p. 425.

* It would also seem that the ancients "confounded Egypt with Abyssinia."—See Sir William Jones's *Works*, vol. i. p. 274. Also Wilford's *Essay on Egypt*, in Supplement to vol. ii. of the same work, p. 544.

† "The Coast of Ethiopia, from the straits to the eastern headland of Aromata, was much better known *after* the time of Ptolemy Philadelphus than it is now to us Europeans.*** There is no doubt that the Arabian possessions must have extended still farther south, perhaps to Madagascar, but they concealed their knowledge from the Greeks."—Laurent's *Ancient Geography*, pp. 349-51.

‡ "The Venetians are thought to have carried on their trade to India with greater advantage than any other nation ever did. They had no direct intercourse with that country, but purchased the commodities of the East, *imported by the Mohammedans into Egypt and Syria*.*** Neither the Greeks nor Romans seem to have visited the more Eastern parts of it (India). They procured the productions of those countries only at second hand."—Dr. Adam's *Ancient Geography and History*, pp. 512-3.

enumerated in Wilford's "Essay on Egypt" and other adjacent countries (see Sir W. Jones's Works, ii. p. 493, *et seq*)., we find that a "part of Africa was called *India* by the Greeks, that Theophylact thought that the Nile flowed through Lybia, Ethiopia and *India*" (p. 544); that Strabo considered that the people of Mauritiana were *Indians* or *Hindús;* that middle India was called *Abyssinia* in the times of Marco Polo; and that Pliny placed Madagascar on the east of Ceylon.

As for the silence of the Ceylonese, it is not at all amazing to me, that a people little accustomed to traffic, and setting no value upon the bark which they did not use either for religious or culinary purposes, omitted to mention the spice in question in any of their books, except their Lexicons or Botanical works, few of which have been spared to us from the ravages of ancient times.*

And this leads me to notice briefly the second part of your inquiry, as to "the uses to which the ancient Siṇhalese applied this spice." Sacrificial offerings, for which in ancient times Cinnamon was used by other nations, were not known to the Siṇhalese. Indeed, they seem to have regarded it as fit only for medicine. Thus, we preceive the plant spoken of, not only in Indian medical books of high antiquity, such as the *Shusruta*, but also in Sanskrit and Páli medical writers of Ceylon. The *Sárathasaṇgrahà* of Buddha Dása (A.D. 350,) and the *Manjúsa* (A.D. 1261,)† both mention Cinnamon as an ingredient used as medicine in cases of "snake poison," "elephantiasis," "rheumatism," &c. Except in modern times, I am not aware that this spice was applied by the Siṇhalese to any other use,‡ and I am

* "Although in the few native works at our present disposal there is no particular mention made of spices, yet we cannot possibly doubt of their consumption in the country itself. This silence, however, is merely the effect of accidental causes; for neither Manu or the Ramayana had any special occasion of alluding to the subject."—Heeren's *Historical Researches*, ii. p. 276.

† Also in the Siṇhalese *Yógaratnákaraya*, A.D. 1472.

‡ I must not, however, omit to state that frequent mention is made in the *Mahávaṇsa* of "scented oils," "spices," and "aromatic oils," (see

unable to ascertain any mention of it in the Siṇhalese books except our Dictionaries and the Poets.* (A.D. 1410—1815.)

You will have doubtless read in modern Siṇhalese history, that upon the capture of the late Kandyan King, the lamp in his palace was found to contain Cinnamon oil; but this was probably a luxury, the use of which was borrowed from the Dutch.†

Before concluding these observations, I must not omit to remark that in defining "Cinnamon tree," Prof. Monier Williams in his Dictionary gives the following Sanskrit sentence, which whether quoted from any book of authority, or not, supports the belief generally entertained, that the plant is indigenous to Ceylon—*Purvókta tikta, valkala visishtaḥ Siṇhala-dvípa róhí kshudra vrikshaḥ*. "The aforenamed (is) a small tree (plant) having pungent bark, and grown in the island of *Siṇhala*."

In the following list I have given the significations of the several

### Sanskrit Names for Cinnamon and Cassia.

1. *Tvatch*, 'skin,' 'bark,' 'rind,' 'peel.'
2. *Varánga*, 'elegant' or 'superior body.'
3. *Brunga*, 'a golden vase.'
4. *Chócha*, 'bark,' 'rind,' 'skin.'‡

---

pp. 124, 182,)—probably referring amongst others to *Cinnamon*, the great fragrance of whose bark was certainly known to the natives, from at least the names given to it (*vide* the list of names at the end.) I have also carefully examined the text of the *Maháwaṇsa*, but have found the words too large to enable me to express a decided opinion on the subject.

* එකලවැදිලිසතුල, ඈනිරිඇනිලමගකො ළ
මදසලවැදවගල, සුවදමල්රොන්පට්න්සුලක ළ *Kavyiasékharaya.*

† But, Baldæus says, that in the beginning of the siege of Colombo by the Dutch, their "General received a letter, writ with his Majesty's own hand," and that "it was curiously perfumed with all sorts of spices."—*Ancient Travels*, p. 720.

‡ These four and the 6th and the 18th, are given in the *Amarakósha*; and it is remarkable that they are all rendered '*woody Cassia*' by Mr. Colebrooke.

5. *Shukla*, 'white,' 'clayed-sugar.'
6. *Utkata*, 'superior,' 'high.'
7. *Saiṇhala*, (given by Pr. H. H. Wilson as *Siṇhala*) 'Ceylon' 'Siṇhalese.'§
8. *Katuparní*, 'pungent leaf.'
9. *Mukhasavrabha*, 'mouth-fragrant.'
10. *Varapriya*, 'highly pleasing,' 'delightful.'||
11. *Sútkata*, same as *Utkata* with the addition of the prefix *Su* 'very,' 'much.'
12. *Lavana-parna*, 'beautiful leaf.'¶
13. *Lamanga*, supposed to be an original Siṇhalese word meaning 'tender body.'**
14. *Phálaguna*, 'frightful,' 'a name of a tree.'
15. *Súra-rasa*, 'highly flavored.'
16. *Mukha-sódana*, 'pungent,' 'sharp.'
17. *Patra-gandha*, 'perfumed leaf.'††
18. *Tvak-patra*, 'bark leaf.'
19. *Gudatvak*, 'sugar-bark.'‡‡
20. *Dáru-gandha*, 'scented wood,' 'Cinnamon.'
21. *Tikta-valkala*, 'pungent bark,' 'Cinnamon.'
22. *Sugandha-tvak*, 'scented-bark.' 'Cinnamon.'
23. *Gandha-valkala*, 'scented-bark,' 'Cinnamon.'§§

---

§ Pr. H. H. Wilson gives this in his "Sanskrit Dictionary" in addition to those given in the *Amarakosha*—all which he translates "*woody cassia*."

|| The first ten names are given in the *Saraswati Nighaṇḍuwa* for "cinnamon."

¶ The first five, and the 7th, 9th, 11th and 12th, are found in the *Siddhawsadha Nighandu* as the names for "cinnamon."

** This name is the same in the *Páli* for "cinnamon."

†† The two first and the 5th, 13th, 14th, 15th, 16th, and 17th, occur in the *Vàsadèva Nighandu* as the names for "cinnamon."

‡‡ Pr. Williams in his English and Sanskrit Dictionary gives this and the 3rd, 6th, 15th, 18th, and 19th as the epithets for "cassia."

§§ The last four are given by the last named writer as synonyms for "cinnamon."

### Sinhalese Names.

1. *Kurundu*, the origin of this word does not appear. Probably it is a proper name, and not an epithet.
2. *Lamaṅga*, from *lama* 'tender,' and *aṅga* 'body,' a word for 'Cinnamon' or 'Cassia.'*

---

* ලමඟකුරුඳු, දෙසැසම්බෙදේ කුරුඳුරුස—*Nâmâvaliya.*

# NOTES ON THE DISTRICT OF BADULLA AND ITS NATURAL PRODUCTS,

By W. C. Ondatjie, Esq., *Assistant Colonial Surgeon.*

The district of Badulla comprehends a no inconsiderable portion of the Central Province; it is in fact of sufficient extent to form a separate Province; and was so regarded when the country was under native Rule; the Government of the District being confided to an officer who bore the title of "Prince of Uva."

The District is bounded towards Ratnapura by Gurumada; towards Hambantoṭa by Bulatgamarálage Kandura; on the Nuwara Eliya side by the Hakgala range of hills; on the side of the Lower Badulla-road by the Uma-oya; on the Batticaloa side by Padu Kumbura or Madura-oya; on the Maturaṭa side by Halgaran-oya: and on the Wallapana side by Madulla. The physical aspect of the whole district is strikingly beautiful, the country being diversified by chains of bold mountains and by undulating hills, which are separated by deep valleys, and extensive plains covered with lemon-grass and low jungle. Rivers and streams as well as springs abound every where, some of them forming beautiful cascades. In fact, the scenery of this part of the country surpasses every other portion of the mountain zone in variety and grandeur.

The most picturesque view is that from Ella, whence one looks down on the low country, studded as it is with nipple-shaped hills of various sizes, and stretching towards Hambantoṭa. On a clear day, the sea itself is visible, and vessels may be sometimes seen passing along the coast.

The hill scenery around the mountain pass of Haputale is unrivalled in magnificence and extent by any other in the Island. Our late Governor, Sir H. G. Ward, has so fully described the view from Haputale, that I quote his own words. He says:—

"I looked with regret, I confess, as I ascended the Pass, probably for the last time, at the magnificent wall of vegetation, towering up the side of the mountain, and about to disappear under the axe of the Planter, while below it, the view embraces the whole Mágam Pattuwa, with the Kattragam hills in the distance,—the Leeways at Bundela, and the white line of surf, beyond, at Kirinda." (Sir H. G. Ward's Minute of Inspection, 1858.) His predictions are being literally fulfilled; already several large Estates have been formed, and the bracing climate will tempt the Planter to remain long here, while the rich soil promises to reward him handsomely.

From Wilson's Bungalow the scene is truly delightful, including an extensive view of deep valleys, and rushing streams, smooth grassy hills that undulate in succession, and mountains whose tops are covered with clouds. The Namanakuli mountain may be seen towering above the others on the Badulla side. From Dewihene Bungalow, (now in ruins,) which is 1,767 feet above Badulla, and 4,110 feet above the level of the sea, an extensive view is obtained of the hills and valleys that stretch below, together with the lofty range of the Nuwara Eliya mountains in the long distance.

From the Kannavarella Estate we gain a view of the sea; and on a clear day, ships sailing along, may be seen. Altogether the view afforded by the variety of objects here is unsurpassed for grandeur.

From Weywelhena Bungalow a full panoramic view of the whole of the valley of Badulla is visible.

From Taldana Pass, 4 miles from Badulla, we notice a

chain of hills, covered with chena cultivation, the highest of which is Nárangala. The lower Badulla-road also may be seen winding along the Badulla-oya. From many other points grand and interesting prospects of the country may be easily commanded.

The town of Badulla is 2,600 feet above the level of the sea. It is 156 miles from Colombo viâ Nuwara Eliya; 84 miles from Kandy; 36 from Nuwara Eliya; 80 from Ratnapura; 76 from Hambantota; and 72 from Batticaloa.

| | *m.* | *furl.* |
|---|---|---|
| The distance from Badulla to Attampiṭiya is | 13 | 4 |
| From Attampiṭiya to Wilson's Bungalow | 11 | 2 |
| From Wilson's Bungalow to Nuwara Eliya | 13 | 0 |
| From Nuwara Eliya to Ramboda ... | 14 | 0 |
| From Ramboda to Pusselláwa ... | 10 | 0 |
| From Pusselláwa to Gampola ... | 10 | 3 |
| From Gampola to Kandy ... ... | 12 | 5 |
| Distance from Badulla to Kandy ... | 84 | 6 |

The town of Badulla is situated on a mound surrounded by an extensive valley extending two miles and of an elliptic form, and presenting a series of terraced paddy-fields of about 400 acres in extent, irrigated by the Badulla-oya and the hill streams,—the valley being a basin bounded by chains of hills covered with lemon-grass. Through the whole extent of the valley runs the Badulla-cya, a serpentine river. It enters the valley from the south-west, and as it proceeds towards the north, receives the small tributary streams known by the name of the Kuḍá-oya, Rambapota-oya, and it finally discharges itself into the Mahaveḷigaṇga.

The Badulla hills are of various elevations, from 400 to several thousand feet above the level of the sea, the highest being 6,700 feet: this is called Namunakuli Kanda, and is situated towards the south of Badulla; on its summit the *Rhododendron* is found growing in great abundance.

## Roads and Communications.

The principal roads are the following:—The *Nuwara Eliya road*, which is the only one that affords the means of uninterrupted communication between Badulla and Kandy; on this road bullock carts may be constantly seen; but it is a very tedious and expensive route.

The *Lower Badulla road;* this passes along the Badulla-oya and Mahaveliganga, and over a flat country, and is undoubtedly the shortest to Kandy, being only 56 miles distant. It is intersected by streams which at times are swollen and which therefore render the road impassable during the rainy season. In many places rocks also form serious obstacles, which are not easy to remove so as to make the road passable for carts. The country traversed by this road is thinly populated, owing to the prevalence of fever for which it has gained notoriety.

The *Madulla road.* This is also a short approach to Kandy, but it is steep, narrow and dangerous.

The *Ratnapura*, *Hambantotta*, and *Batticaloa roads.* These lead to the low country.

The *Ratnapura road* runs over a comparatively flat country in a south-west direction. If this road be open for carts it will greatly facilitate communication with Colombo; while there will be provided also a cheap route from it to the Sanitarium of the Island, and in many other respects the country will be benefited. On each side of the road there is rich pasture land. It is studded too with numerous and populous villages. This ought to be the proper outlet for the District.

Sir H. G. Ward, who had personally inspected all the different lines of communication with Badulla observes in his Minute of Inspection of 1859, that, "The Haputale road still continues to be the favorite object of the Planters. The large amount of land sold near Haputale (5,000 acres), and the increase in the Coffee Crops of the

Badulla District which has risen from 10,000 cwts. in 1855 to 20,000 cwts., and would probably advance much more rapidly, if a better line of communication with Colombo were opened, give to this proposal a greater claim to consideration than it had when first brought before me."

The *Hambantota road* which runs southward, is in some parts very steep and extremely difficult to be converted into a cart-road.

*Batticaloa road.* Carts may proceed twelve miles from Badulla: beyond that distance it is a mere jungle path used for tavalams. It proceeds in a north-east direction.

The *minor roads* are numerous, branching off in various directions to the villages around.

The whole aspect of the District is rapidly undergoing great changes. Numerous Coffee Estates are springing up in all the available land adapted for the cultivation of this staple article of the Commerce of this Island: consequently the District is attracting great attention, and it becomes necessary, that its interests be carefully studied. But it must be observed that the improvement of the country has not kept pace with its extent and importance as a Coffee growing district. This has been owing to two causes. The distance from the sea coast is considerable, and travelling by the great mountain pass, *viâ* Nuwara Eliya, is both tedious and expensive, the progress therefore, of the District, has been much retarded. It labours under the disadvantages consequent on the want of easier and cheaper transport and the town is not so large and important as it ought to be, considering the large capital laid out in the District for the production of Coffee. The rate of transport is very high; cart hire from Badulla to Colombo varies from £6 to £7 *viâ* Nuwara Eliya, and a cart takes longer to reach Colombo than the Overland Mail to England: and even then it is attended with uncertainty and losses, especially during the wet weather. Owing to the expense and difficulty of trans-

port, trades-people and others are discouraged from settling in Badulla, which of course renders living fearfully expensive, every article of consumption being at an exorbitant price. But with the many difficulties to be contended with, I have yet had the pleasure, since my residence in Badulla, of witnessing many material improvements. New roads and bridges to facilitate communication with the district have been constructed; while the extension of the means of Irrigation is proving of pre-eminent service to the native population. Facilities are thus being afforded for bringing waste land under cultivation, and for the extensive production of paddy, which is the staple article of food among the people.

To no cause more than the unremitted zeal of the late Assistant Government Agent of Badulla,—and this is acknowledged throughout the District—are the improvements of the works of Irrigation to be attributed.

## Climate.

There are three seasons. First, the *Dry weather*, which commences in May and continues till the end of August: second, the *Wet weather*, which extends from September to December inclusive; and the third, the *Cold weather*, from January to the end of April. Of these four months of cold weather, the first two are the coldest. It may be stated that generally the thermometer ranges 84° in the shade during the usual dry weather: in the rainy season it is about 80° and often in the mornings as low as 58°; and in the cold season it is 56°, and on the hills it has been observed to be as low as 51°.

The winds blowing in a north-easterly direction are generally cold and bracing, but they become hot and oppressive from May to September, which are the most unhealthy months of the year, especially if there be unusual heat and drought.

## Health.

The low lands of the District are generally unhealthy, arising chiefly from the scarcity of water and food—causes which have tended to the gradual depopulation of this part of the District. Scrofulous ulcerations are frequently met among the natives of Wellaváya, &c. Those parts of Badulla which stretch towards Hambantota and Batticaloa are well-known as fever generating places.

Intermittent fever, or ague, is endemic in Wellaváya and Wellassa, which have a sandy and barren soil, and where wholesome water is scarce. The disease is become so common with the wretched inhabitants of these localities, that they consider themselves subjected only to a temporary inconvenience during the paroxysm, and when that has passed off they betake themselves to their usual avocations. Many of them have enlarged spleen as the consequence of protracted suffering from ague, and present the peculiar exsanguineous appearance which is characteristic of the disease.

Ague is also prevalent at Kataragama, whither people of every part of the Island and from the neighbouring continent of India, Buddhists as well as Hindús, resort annually in the month of July on pilgrimage to a Déválé, which is sacred to the God Kandasvámi.

The Kataragama fever although generally of the intermittent type, soon merges into the remittent character, and destroys great numbers of the pilgrims, when cholera does not break out among them, as is usual on such occasions.

According to the Sinhalese idea of treating some severe cases of fever, no medicine is to be administered until some days have elapsed, when, unfortunately, the fatal symptoms have already supervened. Thus numbers die immediately after their return from the Kataragama festival.

I would here offer a few remarks on an indigenous febrifuge

plant, which I consider, after extensive and most careful trial, to be an efficacious medicine for fever. This statement may be startling to some, especially as the plant belongs to the *Cucurbitaceæ*, which have not a single member possessing any febrifuge properties, but as it is well-known, furnish some of the most powerful cathartics of the Pharmacopœia.

The plant in question is an annual creeping plant, and is known by the name of *Trichosanthes cucumerina*, Lin.; in Siṇhalese it is called Dummẹlla, and grows plentifully in the feverish parts of Uva. It yields to boiling water a bitter principle almost like Gentian or Cherayta. The chemical composition may be thus stated. It contains Tannic Acid, which is also one of the principal constituents of the best kind of Cinchona bark. Bichloride of Mercury throws down a precipitate which is also a test for the Cinchona alkaloids.

An infusion of the dried plant is the form in which I use it, after the bowels have been freely moved by a dose of Pulv. Jalap Comp. or Senna and Epsom Salts.

*Infusion of Trichosanthes Cucumerina.*—Take of the dried plant, leaves and stem one ounce, boiling-water two pints. Infuse four hours in a covered vessel and strain. I use a copper decoction pot.

Dose two ounces, three times daily. It may be given during any stage of intermittent fever; when given in the cold or hot stage, I have found it efficacious in abating the severity of the symptoms. No more than the quantity required for each day ought to be prepared at once, as the infusion begins to ferment when kept beyond a few hours:—

The health of the District is in no small degree owing to the frequent showers of rain that fall over its whole extent. When there is a cessation of these showers, and dry and hot weather succeeds, much unhealthiness is the consequence, and it is then that epidemics break out.

As may be expected when there is a deficiency of the pluvial supply, the high temperature thus caused generates malaria,—the surrounding jungle giving rise to this, and sickness thus prevails ; whereas showers of rain refresh the air, absorb the malaria rising from the ground, and thus remove morbific influences.

The people who inhabit the highlands of the District are remarkably healthy and vigorous, being supplied with abundance of water and food.

With regard to the health of the European settlers, an experience of seven years in medical charge of the station, has convinced me that the climate of the Badulla hills is not inimical to their constitution ; for I have had no case of Dysentery or other disease depending on climate, occurring among them ; and I think the climate of Badulla is certainly more favourable to the health of the Planters than that of the Kandyan Districts. More healthy, active, energetic men are seldom to be met with anywhere else.

## Population.

According to the Census of 1859, this amounted to 44,642 males and 38,619 females ; total, 83,261. The decrease of the population, especially of the low lands, is evident, and is proved by the remains of former Architectural Buildings, which shew that this part of the district of Badulla teemed with a numerous and industrious race of men, whose existence is thus mournfully attested by the traces of a departed greatness.

The subjoined extract from a Report on the present condition of Bintenna, by J. Bailey, Esq., Assistant Government Agent of Badulla, well describes the condition of the country and the character of the scanty population still surviving amid their ancient ruins.

" Now everything is ruinous, and daily becoming more ruined, except the Dágoba, which, during the last three years, there has been a violent

effort to restore. The jungle is encroaching on the once broad street: the slovenly hovels, wretched enough in their best style, are tumbling down—their walls cracked, their roofs falling in: here and there, a half-built house seems to shew an effort at improvement, given up in despair; and, over the place there is an air of desolation, which is inexpressibly melancholy. The people, too, are, for the most part, wretchedly poor and miserably inert."

## Principal Divisions.

1. *Uḍukinda*, or Upper Úva includes Uḍapaláta, Dambavinipaláta, Gampaha Kóralé.

2. *Mẹdakinda*, or Middle Úva, Mahápaláta, Dehivinipaláta, Kumbalvalapaláta.

3. *Yaṭikinda*, or Lower Úva, Bógoḍapaláta, Rilpalapaláta, Baduḷapaṇguva, Passara Kóralé, Kandukara Korálé, Paṭṭipola Kóralé.

4. *Viyaḷuwa*, includes Oyapaláta, Soraṇátotapaláta, Piṭakola, Ẹtulkolapaláta, Palwatta.

5. *Bintẹnna*, includes Bintẹnna, Araḷupiṭpaláta.

6. *Vellassa*, includes Wégampattuva, Nilgalapaláta, Mẹdagampattuva, Dambagallapaláta, Nikavẹṭipaláta, Mahávẹdiraṭa.

7. *Yatikinda*, includes Buttalarata, Deyanagapaha, Páṇḍikkulama, Sittarama and Kataragama, Kóṇgala, Bintẹnna, Kandapalla Kóralé, Wẹllaváya.

*Number of Population in each Division framed on an official Return for 1853.*

| | Males. | Females. | Total. |
|---|---|---|---|
| 1. Uḍukinda ... | 5,627 | 4,584 | 10,211 |
| 2. Mẹdakinda ... | 2,214 | 2,485 | 4,699 |
| 3. Yaṭikinda ... | 6,520 | 5,218 | 11,738 |
| 4. Viyaḷuwa ... | 4,181 | 3,701 | 7,882 |
| 5. Bintẹnna ... | 2,399 | 2,080 | 4,479 |
| 6. Vellassa ... | 7,374 | 5,569 | 12,943 |
| 7. Yatikinda ... | 3,639 | 3,480 | 7,119 |
| Total ... | 31,954 | 27,117 | 59,071 |

## *Rájakáriya* OR COMPULSORY DUTIES UNDER NATIVE RULE.

It will be seen by the subsequent remarks, that every thing produced in the District was attained by a regular system of compulsory labour, which alone seems to have led the people to betake themselves to industrious pursuits; nay, the very personal comforts of the Royal family were administered to by such labour imposed on the inhabitants.

From some of the old natives of Badulla, I have ascertained a number of such *rájakáriya* as were formerly performed in the District, notice of which may perhaps not be altogether uninteresting in connection with the subject of this paper.

1. *Hunu rájakáriya.*—To burn lime or chunam. This compulsory duty was performed by the people of the village called Hagilialle and in their own village.

2. *Hakuru rájakáriya.*—To make jaggery from the kitul palm. A work performed by the villagers of Kumbalvela and in their own village.

3. *Ágaré.*—To dig for precious stones. It was performed by the people of Yaṭapaláta at and near Nuwara Eliya, namely :—Vilmane, Síta Eliya, Bopattaláwa, Lindaoluva and Palalmana.

4. *Pili viyanavá.*—For weaving clothes from a species of shrub cotton which is carried on to this day at Kandapalla. Those of Uḍapaláta performed it in the village itself.

5. *Tel rájakáriya.*—Collecting oil seeds, which was performed by the people of Úva, and the oil extracted and sent to Kandy.

6. *Miris rájakáriya.*—The people of Viyaḷuwa were to collect chillies and send them to Kandy.

7. *Daḷumura-rájakáriya.*—The people of Passara,

Angoḍa, Uḍuvera, Panakana, also from Bombaraboṭuva in Sabaragamuwa supplied the King, at Kandy, with betel leaves.

8. *Yakaḍa rájakáriya.*—To smelt iron and manufacture steel. This was performed by the people of Kandapalla in their own village, and at Sabaragamuwa.

9. *Ívaḍu panguwa.*—To make bows, arrows, rice pounders, handles for lances, and flagstaffs which should have been beautifully lacquered. This was made by the people of Wadecona at the same village.

10. *Ḷunu rájakáriya.*—To manufacture saltpetre. The people of Lunugala proceeded to Gampaha for the purpose.

11. *Kuruveṭṭó.*—Elephant suppliers. The people of Tuppittia supplied elephants.

12. *Wagapanguveṭṭó.*—To search for Elephants. The people of Pussalgolle did the work.

13. *Aḷutpanneṭṭó.*—To blast rocks. The people of Aḷupanna Kumbura blasted rocks wherever they were called to do so.

14. *Sarakku dakvanavá.*—To cultivate condiments, &c., such as coriander, cummin, fennel, dill seed, ginger, anise, cress, or rata-aba; peas, kodomba, or barley. The people of Tennekunvela situated in Uḍukinda Uḍapaláta were to cultivate them. They were also cultivated at Maturaṭa and Bómbara, near Nuwara Eliya. Rája Ráma was a Malabar who was employed to cultive the condiments.

15. *Bétgé.*—There were two Medical Stores, one at Badulla and the other at Kandy, which were supplied by the people of Badulla.

And a numbers of others of less importance.

## Coffee Estates.

The Coffee Estates lie in two different directions, namely, on the Badulla side, and the Haputale range.

Those on the Badulla side are:

| | | | |
|---|---|---|---|
| Vévẹlhínna ... ... | 7½ | miles from | Badulla |
| Ótumba ... ... | do | ,, | do |
| Pẹpolgashínna... ... | do | ,, | do |
| Gavarakẹlé ... ... | 8½ | ,, | do |
| Pupulé *or* Návela ... | 10½ | ,, | do |
| Kannavarella ... ... | 12 | ,, | do |
| Gavarakẹlé East ... | 12 | ,, | do |
| Bẹddegama (Spring Valley) ... ... | 7½ | ,, | do |
| Balagala ... ... | 3 | ,, | do |
| Glen Alpine ... ... | 4 | ,, | do |
| Kóttagoḍa (Maryland) | 4 | ,, | do |
| Vevessa ... ... | 5 | ,, | do |
| Debẹdda ... ... | 8 | ,, | do |
| Passara ... ... | 12 | ,, | do |
| Gónákẹlé ... ... | 12 | ,, | do |
| Aṇgoḍa ... ... | 12 | ,, | do |
| Redipána ... ... | 2 | ,, | do |
| Elizabeth ... ... | 2 | ,, | do |
| Hiṇgurugomuva ... | 3 | ,, | do |
| Náraṇgala ... ... | 8 | , | do |
| Unagala ... ... | 3 | ,, | do |
| Gónágaltẹnna .. ... | 7 | ,, | do |
| Dikbẹdda ... ... | 10 | , | do |
| Uduvara ... ... | 7 | ,, | do |
| Kínakẹlé ... ... | 12 | ,, | do |
| Hindagala ... ... | 12 | ,, | do |
| Mávalamẹdda ... ... | 3 | ,, | do |

On the Haputale side are:

| | | | |
|---|---|---|---|
| Kahagolla ... ... | 25 | miles from | Badulla. |
| Haputale ... ... | 27 | ,, | do |
| Sherwood ... ... | 28 | ,, | do |
| Galkanda ... ... | 29 | ,, | do |
| Viháragolla ... ... | 30 | ,, | do |
| Fenton ... ... | 33 | ,, | do |

| | | | | |
|---|---|---|---|---|
| Haldummulla | ... | ... 35 miles | from | Badulla |
| Lot No. 10 | ... | ... 35 | ,, | do |
| Kaḷupahana | ... | ... 35 | ,, | do |
| Needwood | ... | ... 37 | ,, | do |

3 Estates opening at Lemastoṭa.

3 Estates at the back of Wilson's bungalow.

The elevation of the Estates above the level of the sea, is from 2,400 to 4,800 feet.

The Badulla Estates which lie in an easterly direction are situated on spurs running out from Namunakúli-kanda, while those in a south-westerly direction are on the Haputale side.

The quantity of Coffee produced in the district is about 23,000 cwts. The heavy blossom appears in August and September. The principal crop is picked from April to July. A small crop, chiefly from young Coffee, is picked from September to December.

*Transport of Coffee.*—The produce is sent down to Colombo from April to September. The only road by which Coffee is sent by carts to Colombo is the Nuwara Eliya road. The general rate for a bushel of Parchment Coffee is 2*s*. A cart can take from 60 to 80 bushels, and in fine weather it reaches its destination after a journey of from 20 to 40 days. The wear and tear on this road are very great, to say nothing of the distance of 156 miles, to be travelled over a steep mountain pass. It is not unusual to see cart loaded with Coffee lying at the bottom of a precipice while the bullocks which had brought them have died from exhaustion. It is not likely that the cost of transport by this route will ever become less. It is sometimes enormous.

The Hambantoṭa and Batticaloa roads are used for the transport of Coffee by tavalams. For a bushel of Parchment Coffee 1*s*. is charged : a bullock load is equal to 3 bushels.

A small quantity of Coffee is also sent by the road to Ratnapura. The importance and utility of this road as the proper outlet for the district, are now greater than

ever to the planting community, on whom the advancement of the district depends so much. The necessity therefore for opening it for wheel traffic cannot be overrated. With such a road in existence the whole of the Coffee produced in the district will be sent through it, and the serious losses from long detention and consequent damage of the Coffee will be prevented.

The Coffee which is sent to Hambantoṭa is shipped at that place from October to April, and that which is despatched to Batticaloa, from April to September.

*The rate labour, &c.*, on the estates varies from 7*d.* to 9*d.* per day, and on an average from 4,000 to 5,000 coolies are employed.

*Roads to the Estates.*—Some of the minor roads to the estates are in an unsatisfactory state. They are not only dangerous to travellers on horseback; but it is even difficult to send down the crop by them from the estates. This is owing to the rocks and the stones which are scattered about, and to the roads being cut up by water during wet weather.

COFFEE LAND IN THE BADULLA DISTRICT.

| | Acres. | Acres. |
|---|---|---|
| *Namunakúli, &c.* : | | |
| Lands belonging to private parties ... | 9,176 | |
| Surveyed, yet unsold ... ... ... | 1,282 | |
| Unsurveyed, belonging to Govt., about ... | 3,000 | 13,458 |
| *Haputale* : | | |
| Lands purchased by private parties .. | 13,196 | |
| Advertised, not sold ... ... ... | 1,539 | |
| Unsurveyed, belonging to Govt., about... | 20,000 | 34,735 |
| *Wilson's Bungalow* : | | |
| Lands purchased ... ... ... ... | — | 486 |
| *Valapana* or *Uḍapusselláwa* : | | |
| Lands purchased ... .. .. ... | 9,216 | |
| Surveyed, yet unsold ... ... ... | 1,176 | 10,392 |
| Unsurveyed, belonging to Government, extent unknown... ... ... | — | |

| | | Acres. |
|---|---|---|
| *Nárangala* : | | |
| Lands purchased ... ... ... ... | — | 1,704 |
| *Madulsima, &c.* : | | |
| Unsurveyed, estimated by a Government Surveyor at 14,000 acres, but believed to exceed ... ... ... ... | — | 30,000 |
| | | Acres...90,865 |

31st December, 1860.

## Vegetable Products.

The Agricultural productions of the Natives for

| | 1855 | and | 1859. | |
|---|---|---|---|---|
| Paddy ... | 481,849 | bushels. | 280,758 | bushels. |
| Fine Grain ... | 90,316 | do. | 16,593 | do. |
| Coffee ... | 77,197 | do. | 64,579 | do. |
| Pepper ... | 685 | do. | 465 | do. |
| Mustard ... | 16 | do. | 22 | do. |
| Gram ... | 201 | do. | 10 | do. |
| Indian Corn | 4,667 | do. | 16,388 | do. |
| Cotton ... | 3,817 | lb. | 1,001 | lb |
| Tobacco ... | 7,850 | do. | 2,020 | do. |
| Onions ... | 12,550 | do. | 5,800 | do. |
| Potato ... | 100 | cwt. | 8 | cwt. |

These figures have been obtained from official returns for 1855 and last year. I have inserted them here to give an idea of the quantities produced in the District.

### 1. Vegetable Products used for Food.

#### 1. *Starch.*

Cassava.

Arrowroot.

Kitul Sago, from the Jaggery palm.

Madupiṭi, from the Cycas Circinales.

Kurakkan, Eleusine Coracana.

Italian panicle, Setaria Italica, (Siṇ. *tanahál*).

Millet, Panicum Milliaceum, (Siṇ. *iddal iriṇgu*).

Black Uḷundu, Phasœolus max :
Green Gram, —— radiatus (Siṇ. *muṇeṭa*).
Bengal Gram, Cicer Arietenum, (Tam. *kadalai*).
Madras Horse Gram, Glycine Tomentoso (Siṇ. *koḷḷu*).
Indian Corn, Zea Mays, (Siṇ. *iringu*).
Potatoe.
Edible roots.

2. *Condiments.*

Fennel, Nigella sativa, (Siṇ. *kaḷuduru*).
Coriander, Coriandrum sativum, (Siṇ. *kottamalli*).
Cummin, Cuminum Cyminum, (Siṇ. *maháduru*).
Dill Seed, Anethum Sowa, allied to Dill Seed.
Ginger.
Mustard.
Black Pepper.
Cardamom.
Garlic.
Anise, Pimpinella anisum, (Siṇ. *asamódagam*).
Onion,
Capsicum.
Turmeric, Curcuma longa.

## II. Used in the Arts.

### I. *Gums and Resins.*

Gum of the Wood-apple, Feronia Elephantum.
Gum Kino, Pterocarpus Marsupium.
Gamboge, Garcinia Morella, (Siṇ. *gokaṭu*).
Black Varnish, Semicarpus Gardneri, (Siṇ. *baduḷlu-gaha*).
Gum of Satin Wood, Chloroxylon Swietenia, (Siṇ. *buruta*).
Gum of Ebony, Diospyros melanoxylon, (Siṇ. *kaḷuwara*).

For a description of the Gums, see Asiatic Society's Journal for 1855, p. 71.

### 2. *Oils.*

Gingelly Oil ; obtainable from Viaḷuva
Castor Oil ; common

Ceylon Oak oil, Schlerichera trijuga ; from Viaḷuva ; fruit ripens in October and November.

Mustard Oil ; common.

Kẹkuna Oil, Aleurites triloba ; common ; fruit ripens in April.

Cinnamon suet ; extracted from the fruit.

Gamboge oil ; extracted from the fruit.

Wild Nutmeg Oil ; extracted from the fruit.

Kuḍadavula Oil ; ditto ; fruit ripens in September.

Maḍol Oil, Garcinia echinocarpa ; fruit ripens in September and October.

Mihiriya, Isonandra Sp. ; fruit ripens in October.

Kína oil, Calophyllum tomentosum ; ditto ; fruit ripens in September and October.

Domba Oil, Calophyllum inophyllum ; from Velassa.

Telambu Oil, Sterculia fœtida ; from Teldeṇiya.

3. *Dyes*.

Indian Madder, *or* Munjeet, Rubia cordifolia.

Indigo, Indigofera tinctoria.

Sappan, Cæsalpinia sappan.

Arnotto, Bixea orellana.

Morinda, Morinda exserta.

Turmeric, Curcuma longa.

Buḷu, Terminalia bellerica.

Korakaha, Memecylon umbellatum.

Milkhedge, Euphorbia tirucalli.

4. *Fibres*.

Niyanda, Sanseveira zeylanica.

Pine Apple, Ananassa sativa.

Mudar, Calotropis gigantea.

Plantain, Musa paradisiaca.

Nettle, Urtica heterophylla.

Horse-hair-like fibre of the Kitul. Caryota urens.

New material for the manufacture of Paper.

Barks for bagging, from the Entada Pursætha ; Gyrinops walla : Gnidia eriocephala ; Antiaris saccidora (Siṅ. *ritigaha*) ; Pandanus odoratissimus, &c.

### Animal Products.

Lac. Chermes Lasca.

Wax.

Honey.

Chetah Skins.

### Minerals.

Lime Stone.

Corundum, or Cinnamon Stone.

Talc.

Plumbago.

Iron Ore.

Sulphuret of Iron.

Saltpetre Earth.

Plastic Clays.

I shall briefly notice some of the remarkable natural products indigenous to the district.

### Vegetables.

It has been justly observed by an eminent authority, that "However luxuriantly a country may be covered with valuable plants in the wild state, it is only by special culture that the thousands of textiles we require can be furnished. The existence in the wild state of such plants afford sound foundation for the presumption, that these, when cultivated under similar conditions of climate and soil, will reward the labour of the husbandman.*

*Meal Sago*, from the Jaggery Palm.—This is deserving of attention as an article of diet. being found in the district of Colombo also. But a better mode than that known to the natives must be resorted to to render it clean and pure. As prepared by the natives, it is of a brown colour, mixed with pith and the woody fibre of the stem.

A superior article can be manufactured by pounding the pith when fresh, and straining it through cloth in

* J. Forbes Wilson, A.M., M.D., Reporter on the Products of India, in Journal of Society of Arts, 10th May, 1860.

a large vessel containing water. A good deal of astringent matter will be found in the starch, to which it gives a brown colour. This may be removed by mixing the starch with the white of eggs, which precipitates the tannin, and by straining again the fine pure starch may be obtained. It will be found more glutinous than common sago.

In the month of January, during the rainy weather, the Kitul abounds with starch, which, however, is not found in every tree. The natives discover its presence in a tree by the whiteness of its leaves and petiole, also by boring a hole in the stem and extracting the pith. The Siṇhalese make use of the flour for food after boiling it in steam, which changes it into a gum-like mass.*

*Kitul Jelly.*—Dissolve a tea spoonful of the starch with a little cold water, and pour over it four ounces, or two wineglassfuls of boiling water, and keep stirring till it jellies; then flavour it with milk and sugar.

*Madupiṭi*, from the *Cycas Circinalis.*—The Siṇhalese in the Uva District prepare from this an inferior kind of starch. The fresh kernels are cut in slices and well dried in the sun, before they are fit for use; otherwise they have an intoxicating effect and produce vomiting and diarrhœa. The poorer classes generally use the flour, which is prepared by pounding the kernels. It is also boiled in steam and eaten by patients suffering from bowel complaint and hæmorrhoids, for which it is highly esteemed by the natives as the best medicine. I have given the flour made into porridge in cases of chronic dysentery, and from the few trials that I have made, I think favourably of its effect in restraining inordinate purging such as is often beyond the control of the usual astringent medicines. The tree grows plentifully in Viaḷuwa.

*Barley* was also cultivated in parts of Uḍukinda in the vicinity of Wilson's Bungalow, by Brahmins, who went

* *Vide* Observations on the Vegetable Products of Ceylon, p. 33.

under the designation of "*Rájakáriya*," and who were employed by the King of Kandy for the purpose. It was first cultivated in Tennakón Vela, and is now found in Ambavela and Waugala. In the last-mentioned place it is still cultivated by the descendants of the said "*Rájakáriya*" who are now become Sinhalese by intermarriage. It is called *kotomba*, or *yava*, and is cultivated in October and November, and gathered after seven months. The soil is manured with cow dung.

From the seeds of the *Nymphœa stellata*, the people at Bintenna prepare starch, which they use during times of scarcity. They also use a decoction of the seed in dysentery. The seeds are collected from tanks from June to September.

The process by which Kitul toddy drawers in Úva increase the flow of the juice of blossoms, or force it out from unproductive ones, deserves to be noticed:—The process is called "*Kitul mala behet tiyanavá.*"

Black pepper, ginger, burnt coconut, or old dried coconut, garlic, and chilli, are all roasted together, and being ground with the juice of a kind of lime, *nasnáran*, the mass is made into a ball. Then take the leaves of a species of Arum called in Sinhalese *sudu ala kola* and boil them in a little of the lime juice. Make five pegs an inch long of five varieties of lime wood, which they call *paspengiri-ul-paha*, and two pegs of Cinnamon wood, and a tree called *Ittu*. These pegs are only used to increase the flow of the juice. But to force out the juice from unproductive blossoms, drive into the flower stalk two pegs of *ratnetul* (PLUMBAGO ROSEA) and *ankenda*.

When the pegs are ready, cut a groove into the flower stalk, three inches long, one inch deep, and one inch broad. To the half of the groove near the stem apply the spice ball above described; to the other half, the boiled leaves of the Arum, into which the pegs are to be driven,

and roll a piece of mat over the stalk and cut out a ring from the spadix an inch from the stalk. Apply a quantity of ashes of Areca leaves and *akmala*, which being well mixed with the syrup of the kitul juice is rubbed over the part of the blossom which had not spread out, and allow to dry four days: on the other part of the flower roll down the bark of the *Naha* (Gnidia eriocephala) and then cut off the end of the flower, four days after which the juice begins to flow.

A kitul flower lasts two months, sometimes three. A flower yields four seers of toddy in twenty-four hours. It is very important to select the flower at the proper time; if it be too young or too old, no juice will be obtained. The best time for cutting is when it forms a curve and bulges out like a plantain flower.

I have since heard that a similar process is had recourse to in the Colombo District.

## Condiments.

Nearly all the condiments that I have enumerated above are produced in Uḍakinde; in former times they were cultivated by Malabars who were employed by the King of Kandy, and received from him grants of land for that purpose.

## Gums.

Among these the Gum *kína* may be briefly noticed. In 1853, I first pointed out that the tree yielded the gum kìna of Commerce. I drew public attention to the subject in a letter published in the *Ceylon Times* in April of the same year. It is true that the tree is mentioned in "Moon's Catalogue," page 52, but he seems not to have been aware of its useful properties.

I submitted specimens of the gum to the Chamber of Commerce, and they reported that it was of "good quality." It is sold in the London market at from 25*s*. to 47*s*. per cwt.

The difficulty of obtaining large quantities has arisen from the difficulty of securing the services of the Siṇhalese to collect it.

The tree is found at Aṇgoḍa, near Badulla, Teldeṇiya and Nilgalla or the Park.

*Black Varnish* is produced from a species of *Semicarpus*. This gum resin is equal to the black varnish of China for the purpose of lacquering. It exudes spontaneously from the stem and branches, and may also be obtained by making incisions in the bark. The resin is hard, breaks with a smooth shining fracture, burns with a bright flame, melts in fire, is soluble in turpentine, insoluble in water, and adheres strongly to wood and metal. The fresh juice is very acrid, inflaming the skin, and producing pustules.

To a saturated solution of Vateria resin (*Hal-dummala* of the Siṇhalese) in oil of Turpentine, add by degrees small pieces of the black resin; put it into a bottle and shake it well until the whole is dissolved. Strain, and then apply it to wood or metal.

It belongs to the same natural family of plants as the Varnish tree of China and Japan, and possesses the same acrid properties when applied to the skin in a fresh state, as it exudes from the bark.

The resin exudes from natural fissures of the bark, and at first white, becomes afterwards black by exposure to the sun, hardening into masses of different sizes. The juice also drops on the ground around the tree forming flattened pieces of resin. My attention was drawn to this tree while stationed in Badulla in 1852. A soldier was cutting firewood in the neighbourhood of Badulla, and among other trees he felled the *Badulla-gaha* tree. The juice spurted out at each cut of the axe on his fore-arm; he returned home and washed himself; the next day he felt an itching in the arm, in the evening it was swollen red and painful; next morning he was unable to wear

his jacket and went to Hospital, a pustular eruption not unlike that produced by Tartar Emetic ointment having broken out in the places where the juice had touched the skin. He rapidly recovered, however, by the application of warm fomentations and olive oil.

Now this corrosive property is the same as that which is described by Rumphius as belonging to the Varnish tree of Sumatra and the Eastern Isles. He says:

"The exhalations of this tree are considered noxious, and the people of Macassar and other parts of Celebes in particular, entertain such a dread of it, that they dare not remain long, much less repose, under its shade. They say, that whoever receives the droppings from it will have his body swelled, and be afflicted with malignant sores. As, however, it furnishes the celebrated varnish, other people boldly repair to this tree, particularly the Chinese and the Tonquinese, who employ great precaution in collecting the resin, which is accomplished in the following manner. A number of Chinese proceed about evening to the place where the trees grow, which is always at a distance from the resort of man or animals; each selects a few, and inserts into the trunk two pieces of bamboo, sharpened at their points in such a manner as to penetrate the bark in a somewhat oblique direction. These remain all night, and are extracted before sun-rise the next morning, the tree yielding no juice during the day. The resin is found in greater or less quantity, according to the richness or poorness of the soil, and is obtained only at certain seasons of the year, particularly about the time of flowering. The people who collect it unite the fruit of their labor, and afterwards make a complete division of the whole, on which account this resin maintains a high price, a single pikul (containing a hundred catties) selling in those provinces of China which do not possess this tree, for two or three hundred dollars; in Tonkin and Camboja, however, it may be had for thirty, fifty, or sixty dollars. It is a custom among the Chinese when they approach this tree, first to rub the trunk lightly, before inserting the bamboo, wishing by this to shew that they are not afraid, for they say, that timid persons will sooner feel its noxious effects than those who are bold and fearless."

This tree is found growing both in low-lands and high-lands. In and around the Cinnamon Gardens; at Awisá-

wélla, Kuruwiṭi Kóralé, at Haṉwella, in the Three Kóralés, and at Am̃bagamuwa, and in the Badulla district.

*Gamboge.*—The Gamboge tree grows plentifully, but the natives seldom extract its valuable gum. They extract oil from its fruit, which ripens in August, and use it for culinary purposes.

## OILS.

The solid oils which are common in the district are the "Cinnamon suet," obtained by boiling the Cinnamon fruit. "Gamboge oil," also by boiling the fruit.

The wild Nutmeg (*Myristica tomentosa*) likewise yields a solid oil by boiling the kernel.

The *Madol* oil (*Garcinia echinocarpa*).

*Meheriya* oil (*Isonandra*, Sp.), are also fatty oils.

All these oils may, I think, be applied to the manufacturing of Soap.

## DYES.

Indian Madder, or Munjeet. Among dyes, the Madder is the most remarkable. It grows in abundance in and around Badulla in scattered groups.

The natives have never used it as a dyeing plant, being wholly ignorant of its useful properties; they look upon it altogether as a weed.

In the early part of 1853, I submitted specimens to the Ceylon Chamber of Commerce. The plant grows in moist situations, the soil being a vegetable mould.

The valley of Badulla is remarkably fertile, abounding in limestone, and plants growing in such localities generally yield a beautiful bright red dye.

As the plant has hitherto been known to grow only in a wild state, time and experience will be required before the mode of cultivation best suited for it, can be ascertained. Excellent specimens of the root of the Madder grow in

Gampaha near Uḍapusselláwa. Specimens of the plant with a drawing of it were forwarded to Government, who sent them to the Chamber of Commerce in December 1853.

The drawing consisted of two parts, No. 1 represented all the parts of the plant to identify the species, with magnified views of the flower, and section of the fruit. No. 2 shewed the appearance and ramification of the root, so that its commercial value might be indicated Both parts of the drawing were of natural size.* The Indian Madder is not so valueless as some would make it appear. We learn from a high authority in such matters, that "the Madder is produced in Nepaul and in various districts of India. That which is brought to England, is imported from Culcutta, and is cultivated in the high lands about Natpore in Purneah. The roots are long and slender, and when broken appear of a red color. It is used in dyeing; the red which it produces being, though somewhat peculiar, nearly the same as that produced by European madder."

Dr. Bancroft says "that upon wool, or woolen cloth, its colour is brighter and livelier than upon cotton or linen; and, when proper mordants are used, nearly, perhaps quite, as permanent."

It is stated in the Jury Report, "that specimens of madder grown in localities deficient in lime were considered inferior." The Reports of the Juries of the Great Exhibition of 1851, on Indian Madder, are encouraging; they state, "that the Indian Madder is a valuable dye stuff, and hitherto not so well appreciated as it deserves, for some of the colours dyed with it are as permanent as those dyed with European Madder, and even more brilliant; its use is, however, gradually increasing, and it is unquestionably well worthy the attention of dyers.'

For the following Oriental names of the Madder plant

---

* For a full description of the Madder plant as found in Badulla, see "Observations of the Vegetable Products of Ceylon," page 17.

with their derivations, I am indebted to my brother, the Rev. S. D. J. Ondaatje, of Mátara.

*Manjéttha*—from the verb (මජ) *Maja*, to cleanse or purify, —and (ථා) *tha*, the participial termination of the feminine gender. This verb, besides its ideal meaning, conveys the notions of clearness, and brightness, and is used to express ideas connected with such qualities; hence the terms for red and redness come from this verb. In Pali, *Mañjéṭṭha* (මඤ්ජෙට්ඨ) means red ; hence the creeper is called by that name : the quality of redness being expressed by the term.

*Vikasá*, (විකාසා), from *vi*, a preposition, and *kasá*, to glitter, participial adjective, having a causal meaning: that which causes to shine, or glitter, or sparkle; hence a plant by which a bright red colour is imparted. These two words, (*Manjéttha ; Vikasá*,) have the same signification in Sanskrit.

*Raktáṅgi* (රක්තාඞ්ගී). This means a red body : *rakta*, red ; *aṅga*, body or limb ; and is applied to the plant.

*Padmaká*, (පද්මකා). *Padma* means the red lotus ; hence *Padmaká* is, having the property of redness, resembling the red lotus.

*Vastrabhúshaṇa*. (වස්ත්‍රභූෂණ). This means, that which dyes cloth : *vastra* cloth or vestment ; *bhúshaṇa*, that which adorns or beautifies.

*Raktayashṭi*, (රක්තයෂ්ටි) : *rakta*, red ; and *yashṭi*, stem ; hence the word means, that which has a stem whose property is to impart redness.

*Eḷu Names.*

*Veḷmadaṭa*. (වෙල්මදට): *veḷ*, a creeper ; *madaṭa*, red ; hence a red dye imparting creeper. This is a derivative from the Pali, *mañjéṭṭha*.

*Samaṅgá*, (සමඞ්ගා), means that which unites or blends with, and so a plant yielding a dye that colours any substance, by union with it.

*Yójanavalli*, (යොජනවැල්ල), means a creeper of the length of a mile; *yójana*, a mile, and *valli*, a creeper; because the creeper is of great length; a very appropriate name, seeing that the stem creeping on trees forms an interminable net-work.

*Sapan wood*, is found in abundance in Wellawáya, from whence it is taken to Hambantoṭa for exportation.

*Morinda wood*, found in Wellassa. The native dyers of the Coast of India grind the root, and make an infusion, to which a piece of alum being added, the colour is changed from yellow to red. It is used as a red-dye for cotton cloth. It is the *Ahu-gaha* of the Siṇhalese, and *Nuṇá-maram* of the Tamils. In India it is known by the name of Hal dye,* The Jury of the Great Exhibition have stated that "the colours dyed with the Morinda are for the most part not brilliant, but the colouring matter is far more permanent than many other red colours are, and with improved management would probably rival that of Madder; it would therefore perhaps be a useful dye stuff; it appears well worthy the attention of dyers."

*Arnotto.*—This is the produce of the *Bixa orellana.* The tree grows wild in and about Badulla, Passara, and Wellassa. The dye may be prepared by a simple and inexpensive process, namely, by steeping the seeds in water, and removing the colouring matter from them. The colouring matter which remains suspended in water is then boiled in large copper vessels to the consistency of syrup.

*Terminalia Chebula.*—The drupes are collected and taken down to Colombo from various parts of Uva. They are used to dye black, and are called "Gall nuts," or Myrobalans. They are used both in dyeing and tanning, and form one of the exports of the country; with alum it forms a yellow colour, and with the salts of iron black.

---

* *Vide* "Observations on the Vegetable Products of Ceylon," 1853, p. 14.

It is remarkable that the word *triphala*, commonly used by the Siṇhalese quacks to include decoction of the three Myrobalans, is a Sanskrit word, derived originally from a very ancient work, which according to Professor Wilson was written before the 9th or 10th century. (Royle.) It is stated by the Jury Report of the Madras Exhibition, that Gall nuts "have become a very important article of trade, and the consumption is now fully 2,000 tons annually." (Archer.)

*Indigo.*—I submitted specimens prepared from the *Indigofera tinctoria* growing wild at Dikwẹlla, near the Badulla oya and paddy fields. It is found in groups. I collected a quantity of the plant in July 1855, and subjected it to the keeping process which is generally adopted in Bengal. The plants attain a good height, and from their luxuriant growth shew that the soil and climate of Badulla are well adapted for its cultivation.

I subjoin an extract from a letter, dated 9th October, 1855, from the Secretary of the Chamber of Commerce, Colombo.

"I am requested by the Committee of the Chamber of Commerce to acknowledge your letter of the 25th September, and to thank you for the sample of Indigo forwarded. I am also requested to inform you that the quality of it is good, taking into consideration the circumstances under which it has been prepared."

(Signed) R. NICOL."

FIBRES.

*Fibre* is the modification of single cells. Fibre from *endogens* is generally white, and contains more lignine or woody matter; hence it is less adapted to resist strain, and possesses less flexibility and softness than that from *exogens*.

The fibres of *endogens* most commonly applied to useful purposes are derived from leaves, as the aloes, agave, yucca or Adam's needle, sanseviera, fourcroya or gigantic aloe, ananas or pine-apple; and from stems, as the musa or plantain; and from the husk of seeds, as the coconut palm; and from the sheath of the leaves of the jaggery palm or kitul, the black horse-hair-like fibre. From the *exogens* we derive many valuable kinds, viz., flax, rhea or China

grass cloth fibre, the *Urtica heterophylla* called vegetable wool, the *Calatropis gigantea* or mudar, *Hibiscus cannabinus*, from which gunny bags are made.

The extraction of fibre during the native rule was one of the services imposed on the Rodiya caste, who had to supply the stores of the King with ropes made of different fibres chiefly of the *Sanseviera* and *Kitul* or jaggery palm.

These people up to this day continue manufacturing fibre ropes, and they are very expert in extracting fibre with the hand, which I ascertained when I employed them for the purpose: but they are indolent and do not seem to care about working regularly.

One of the most remarkable fibres found in the districts is the *Sanseviera Zeylanica*, or bow string hemp. This plant grows in great abundance in the otherwise barren parts stretching towards Batticaloa, and the lower road to Kandy. It has 5, 6, 8, 10, 20, radical leaves, with dark matches or spots across, which disappear when they become old. The young leaves are nearly round, and the old ones are marked with longitudinal lines terminating on an obtuse point. Plants growing near streams yield good strong white fibre, the best kinds being obtained from the young leaves; these generally measure from one to three feet; the longest of those growing at Alipot, reached to four feet and a half.

The natives have recourse to various methods of extracting the fibre, by scraping the leaves, and maceration. To two sticks fixed in the ground a piece of split bamboo with a sharp edge is fastened horizontally at a convenient height for the operator. He begins by scraping the base of the leaf, and twisting the fibre round a piece of stick, with which he holds the leaf firmly, and draws the upper surface towards him; thus scraping the pulp and with it removing much of the short fibre, which will make good tow. The Rodiyas substitute a buffalo's rib for the sharp-edged bamboo, placing

the concave side of the rib towards the operator, and using the same process as that I have already mentioned.

Another method is to scrape the leaf between two sharp pieces of bamboo placed one above the other, leaving a narrow interestice between them, through which the apex or narrow point of the leaf is drawn out. By this method of extracting the fibre the following results are obtained. One of the leaves yields 100 grains of clean fibre, and 70 grains of tow. Half a cwt. of leaves yields $\frac{3}{4}$ lb. of fibre; cost of collecting leaves $7\frac{1}{2}$*d.*, cleaning $7\frac{1}{2}$d.; $\frac{3}{4}$ lb. of fibre costs 15*d.*, 1 cwt. costs £9 6*s.* 8*d.* 250 leaves on an average weigh 20 lbs., and 500 yield $\frac{1}{2}$ lb. fibre and $\frac{1}{4}$ lb. tow; $\frac{1}{2}$ cwt. contains 641 leaves. It may be stated generally, that 1 cwt. of leaves yields $1\frac{1}{2}$ lb. of fibre; 75 lbs. of leaves can be cleaned by one man in a day, yielding 1 lb. of fibre and $\frac{1}{2}$ lb. of tow; 1 lb. of leaves could be cleaned in 10 minutes.

By maceration, 1 lb. of leaves macerated for five days yielded 225 grains of fibre; 1 cwt. yielded 4 lbs. 4 oz. of fibre

The plant grows near Badulla at Ridipána, Donhindayi. Bóliyadda, and at Pisce, where it is found in perfection.

From the above it is scarcely necessary to remark, that the extraction of fibre by hand labour can never be made remunerative.

*Horse-hair-like fibre of the Kitul or Jaggery Palm.*—Very strong black fibre, like horse-hair, about 3 feet long. It is well adapted for making brushes, and for other purposes, for which horse-hair and bristle are used. I forwarded a brush made of this fibre to the Society in 1853; and I believe this first drew the attention of the merchants at Colombo to the subject, the brush having been shewn by Dr. Lamprey to one of them. Large quantities are now exported to England.

It is found in great abundance in Mẹdikinda as high up as Haputale. Owing to strong winds which prevail in

Udukinda the trees are blown down, and very few are to be found growing there.

*Antiaris Saccidora.*—A remarkable forest tree, called in Sinhalese riṭigaha. By an ingenious though simple process, the natives prepare from the bark of this tree, material for very strong and elastic sacks for the purpose of carrying paddy, &c. The trees selected for the purpose are from $\frac{3}{4}$ to 1 foot in diameter. Large ones, sometimes measuring as much as $4\frac{1}{2}$ feet and more in diameter, are not so suitable.

When a tree has been fixed upon, the stem is cut down and divided into junks of the size required, and these having been firmly placed on the ground, the bark is well beaten with a stone or club, until the parenchymatous parts, or what is commonly called the cortical, comes off, leaving the liber or inner bark attached to the wood, which is then entirely separated from it by simply drawing it out with the hand. The bark thus obtained is of a fibrous structure, remarkably tough, presenting the appearance of a woven fabric like that of a stocking.* No scientific description of the tree found in Ceylon was published previous to 1853, although it was well known to the people of Badulla.

*New Material for the Manufacture of Paper.*—In Eastern countries paper was manufactured from indigenous fibre long before it was introduced into Europe in the eleventh century. According to Col. Sykes, for 2,000 years paper had been made in India; never from rags, but always from fibre. Some years ago I brought to notice the mode adopted by the natives of Badulla for manufacturing paper.

When in 1853 the scarcity of rags in the European markets began to be felt, I commenced my experiments on various indigenous products found in the district of Badulla.†

* *Vide* "Observations on the Vegetable Products of Ceylon," page 20-21.
† *Vide* Journal Asiatic Society, Ceylon, 1855, p. 74-75.

A small factory was set up five miles from Badulla, at Ambagaha oya, where the material was found in abundance, and paper was made by hand labour. I now lay before you a few specimens of the paper mannfactured by me.

After spending nearly £200 I was obliged to abandon the manufacture, owing to the want of suitable machinery for reducing the raw material into pulp. With proper machinery the cost may be greatly reduced; and I believe, that the manufacture of paper with this new material will yield a good return. The pulp is not easily distinguishable from that made of rags; 90 grains made one sheet of paper of the size of foolscap: 12 sheets of paper made with it weighed 2 oz. 2 drs.; 1 ream 100 oz. Again 160 lbs. of the raw material made four reams of paper. Weight of 1 sheet of paper 70 grains; 8 lbs. 6 oz. of pulp are required to make 1 ream. 1 lb. of fresh material yields $\frac{1}{4}$ lb. of paper pulp.

The specimens of paper manufactured by me were submitted by Government to the Stationery Committee, com posed of Mr. Saunders, Captain Higgs, and Major Layard. These gentlemen reported in a letter to the honourable the Colonial Secretary, dated 8th August, 1856, that "the specimens might be rendered applicable to many useful purposes, such as tor making envelopes, and printing licences, permits, way bills, &c.; the blotting paper would answer very well."

Mr. Bernard, Deputy Commissary General, in a letter to the Colonial Secretary, dated 25th August, 1857, states "with regard to the quality of the paper it appears to me, that even now they are much better than a great part of the paper manufactured in India, and extensively used in public offices there." I forwarded 1 cwt. of paper-pulp to the Chamber of Commerce, Colombo, on the 19th September, 1855. The Secretary informed me "that the 1 cwt. of the pulp is now

being shipped to London as a trial, and the result of the sale, and the broker's report thereon, shall be forwarded you on receipt." No information of the trial of the pulp in London has yet been communicated to me. The pulp was forwarded by Messrs. Armitage Brothers.

In the Appendix to this paper will be found Correspondence with Government on the subject of the manufacture of paper.

I have also tested the pulp as a substitute for making articles of papier maché.

*Cotton* is cultivated in Kandapalla, a dry part of the district; and formerly a very coarse kind of cotton cloth was manufactured there.

## Animal Products.

*Lac* is found in the *Gyrocarpus Jacquini*, and the people of Bintẹnne collect it from June to September; it is of good quality. The lac yields to boiling water a red dye, and with solution of alum strikes a beautiful carmine.

It is the produce of the *Chermes Lacca.* Lacker painting is carried on in Wadakonna, and much of the lac is used for this purpose. Walking sticks, handles for knives, and bows, are beautifully lackered.

This also was a "*Rájakáriya*" in the district. A good deal of lac is obtained from Kandapalla where it is gathered in July.

## Minerals.

Lime-stone abounds very extensively throughout the district. During the native rule, lime was largely prepared at a place called Háṇgiliẹlla on the Nuwara Eliya road; its preparation being one of the compulsory duties imposed on the people.

## Digging for Precious Stones.

This was also made one of the compulsory duties called "Agery," and the work was carried on at Nuwara Eliya in the following localities:—Vilmána, Lindaoḷuva, Bagawantaláwa, Sítá Eliya, Bópatalava, Mahá Eliya, Uḍavilmána,

Mápillamána, Madwalamulla, Palalmána, and Pataragaldóva.

## Iron Ore.

There is abundance of iron ore in the following places :—Tolabówatta, Uḍawádiya (near Nahaville,) Hílpeṇkandura, Vaha Eliya in Kandapalla, Horagóna also in Kandapalla, Hattawalla in Bógoḍa.

The place where iron was smelted for the King of Kandy was at Kínagandóva in Tolabowatta, and it was made a compulsory labour performed by the people of Kandapalla and Sabaragamuwa.* Magnetic iron ore is found at Kahaṭavela, near Paranagama, Yaṭakohilla, and on the road to Kataragama.

Sulphuret of Iron, from Binteṇna, is composed of arsenic in a greater quantity than sulphur. Large masses of this substance are found in various parts of the low country. In passing along some of them, the attention is arrested by the not very pelasant odour of sulphureted hydrogen gas evolved by them.

It is the general belief of the people that sulphur ore exists in Walapana and Binteṇna. I obtained a specimen of this ore from a Kandyan at Gampaha, but I have not been able to ascertain the locality from whence it was obtained. The preparation of sulphur was one of the compulsory duties which was rendered by the family of Teṇnegedara at Teripeḥe in Walapana.

## Corundum, or Cinnamon Stone.

This abounds in a place called Batgamaná, which is situated 12 miles from Alipot. The mineral is found in a stream called the *Agáre-kandura.* The natives prepare a useful hone by a composition of the powder of this mineral with lac ; they melt the lac, and gradually add the powder, which when cooled becomes hard, and is shaped into different sizes.

* For a description of the mode of manufacturing steel as adopted by the Sinhalese, *vide* Journal of the Asiatic Society of Ceylon, 1855, p. 73.

*Iron alum*, found as an efflorescence on a decomposing rock of gneiss called *pudama* near Teldeṇiya. The specimen contains more iron than alum.

*Plumbago* abounds in Bintenna.

### Nitre Earth.

There are numbers of nitriferous caverns in this district composed of large limestone rocks with subterranean passages, and containing heaps of mould-like earth emitting a strong ammoniacal odour. These heaps are the products of the dung of myriads of bats that have inhabited there from ages. By the action of the carbonate of lime in the limestone on the dung thus deposited, there results the well-known chemical compound of nitrate of lime such as is obtained from the artificial nitre beds of Europe. The Siṇhalese, who call the earth *vavul pas*, "bats earth," have a mode of converting it into saltpetre not altogether dissimilar to the mode adopted in Europe at the present day, by which the nitrate of lime is converted, by means of ashes, into the nitrate of potash or saltpetre.

The manufacture of saltpetre was one of the compulsory labours imposed on the people of the district, and called *Lunu-rájakáriya* which began in the month of June or July. The people of Lunu-gala, a village about four miles from Badulla, proceeded to a cave at Gampaha in Kandapalla kóralé and constructed sheds for the manufacture, they were assisted by others who furnished them with torches and oil for working in the dark caves.

The manufacturers of the nitre belonged to a caste called *Vahumpurayó*, who collected nitre earth and firewood: four or five *gamarálas* supplied them with a quantity of kakune or kene oil, a dhoby furnished torches made of cloth and the dried spath of the coconut, and potters of Tunkinde supplied pots for carrying on the manufacture.

The following is the process adopted, which is exceedingly simple and inexpensive. They take a quantity of nitre

earth and mix it up with wood-ashes of the *Erythrina Indica* and *Terminalia* alata, or the petiole of the coconut; putting the whole into a large talipot leaf previously shaped into the form of a funnel; they then proceed to pour water over and filter this mixture of earth and ashes. This operation is continued until the water begins to look turbid, when it must at once cease, as this is an indication of the purely earthy character of the particles yet remaining in the leaf. The washing obtained in the way above described is generallv very clean, possessing a strong ammoniacal odour, and containing nitrate of potash in solution. To crystallize this, they remove the washing into a large chatty in which it is boiled till it thickens and presents the appearance of "a mixture of flour and water;" in this state it is transferred to another earthen chatty having a rough surface within, called *koraha*, where it is left until crystallization takes place. But as the crystals thus formed do not look white and nice, they are dissolved once more in water, and allowed to crystallize again, when fine large crystals are produced. The saltpetre obtained in this way was used by the Kandyans chiefly for making fireworks; indeed the native term for it, *vediḷuṇu* would indicate this much. Great attention appears to have been paid by the Siṇhalese to the Pyrotechnic art, on which they have numerous and elaborate compositions. The Chinese it is well-known have always been famous for their fireworks, which are superior to those of other nations in variety and beauty. They likewise used saltpetre for this purpose before they became acquainted with the art of making gunpowder.

Dr. Davy's early scientific researches in Ceylon ought to be more generally known than they have been among the residents and others who are engaged in similar researches. The learned Doctor travelled through the length and breadth of the Island; he had excellent opportunities for making personal observations, and his descriptions of

every thing he saw, examined, and described, are generally correct, even to this day. I quote from his valuable "Account of the Interior of Ceylon" published in 1821, respecting the Nitre Caves of Ceylon :—

"Nitre and Nitrat of lime are of frequent occurrence. The names of twenty-two places may be enumerated, in which saltpetre is produced, and in which it has been manufactured ; and no doubt, besides these, there are many other spots that yield this salt, known to the natives, whose policy it is not to make us acquainted with them. Judging from four nitre caves that I have visited, and from the specimens of rocks of several more that I have examined, I believe that they are all very similar; and that the rock in which they occur, in every instance contains at least felspar and carbonate of lime ; from the decomposition of the former of which, the alkaline base of the salt is generally derived, and by the peculiar influence of the latter, (yet not at all understood,) on the oxygen and azote of the atmosphere, the acid principal is generated. In confirmation of this statement, it may be remarked, that I have never been able to detect saltpetre, excepting superficially, where air could have access; never unaccompanied by nitrat of lime, or magnesia ; in no rock, not containing lime and felspar; that the richness of the rock, in general, has been proportional to the abundance and intimate mixture of these two ingredients ; and that the results of experiments which I have made on a variety of specimens of saltpetre-earth from Bengal, for which I am indebted to the kindness of Mr. Brown of Calcutta, were similar to those just mentioned, and tended to the same conclusions.

"Besides the essential circumstances of the presence of atmospheric air, lime, and an alkaline mineral, there are other circumstances which, if my observations be correct, greatly aid in the operation of forming the salt. I shall mention the most remarkable only, which appear to me to be slight humidity and the presence of a little animal matter. Perhaps, humidity is absolutely necessary ; certainly, I have seen spots in a nitre cave, without any impregnation of saltpetre, which, excepting their great dryness, seemed to possess every requisite for the production of the salt. Animal matter, by those ignorant of chemistry, is considered of itself the chief source of nitre. Persuaded of this, my countrymen in Ceylon, with whom I conversed on the subject, generally attributed the saltpetre of the caves in question to the dung of bats, with which the caves are more or less infested. It is easy to refute such a notion ; and to

shew, that the dung of these animals, like any animal matter, is not an essential, merely an assistant circumstance. For this purpose, it will be sufficient to remark, that in the nitre cave near Memoora in Doombera, in a very compounded rock consisting of calcspar, felspar, quartz, mica, and talc, in a humid state exposed to the air, and slowly decomposing, I have found a rich impregnation of saltpetre, though quite free from the dung of bats, or any other animal matter; and conversely, that I have not been able to detect any traces of this salt in the dung of bats, that had accumulated in great quantity in an old forsaken pagodah.

"A description of the nitre caves which I have visited, will be found in another part of this work, and an account of the method employed by the natives, both in the manufacture of saltpetre and of gunpowder. I may here give the results of some analyses, that I have made, which will shew the composition, of the most productive nitre rock of Doombera, of the most productive nitre earth of Ouva, and of the richest nitre earth of Bengal. The nitre rock of Doombera was from the Memoora cave, the same as that before mentioned as free from animal matter; 100 parts of this very compounded rock were found to consist of—

| | |
|---|---|
| 2·4 | nitrat of potash. |
| 0·7 | nitrat of magnesia. |
| 0·2 | sulphat of magnesia. |
| 9·4 | water. |
| 26·5 | carbonat of lime. |
| 60·7 | earthy matter, insoluble in dilute nitric acid. |
| 100·0 | |

100 parts of the nitre earth, from the great cave in lower Ouva, near Wellaway, were found to consist of—

| | |
|---|---|
| 3·3 | nitrat of potash, with traces of common salt and sulphat of lime. |
| 3·5 | nitrat of lime. |
| 15·3 | water. |
| 25·7 | animal matter of difficult solubility. |
| 1·0 | animal matter easily soluble in water. |
| 51·2 | carbonat of lime and earthy matter. |
| 100·0 | |

100 parts of nitre earth from Bengal, from the district of Tirhoot, were found to consist of—

| | |
|---|---|
| 8·3 | nitrat of potash. |
| 3·7 | nitrat of lime. |
| 0·8 | sulphat of lime, with a trace of iron. |
| 0·2 | common salt. |
| 35·0 | carbonat of lime, with trace of magnesia. |
| 40·0 | earthy matter, insoluble in water and nitric acid. |
| 12·0 | water, with a trace of vegetable matter. |
| 100·0 | |

"Nitrat of lime I have never met with, excepting in combination with nitre. Sulphat of magnesia I have found in one place only, viz., the nitre cave of Memoora in Doombera. In the same cave, and no where else, I discovered alum, in minute quantity. I suspect that the acid of both these salts is derived from decomposing of pyrites, and that the magnesia of the sulphat is afforded by decomposing talc. This sulphat forms with the nitre, and crystallizes with it. It is carefully picked out and rejected by the native workmen who prepare the saltpetre, being ignorant of its value. A considerable quantity of it, equal to the best Epsom salt, might be procured in this cave, and I know no reason why it should not be collected."*

---

Appendix.

*Badulla*, 19*th July*, 1856.

Sir,—I beg leave to submit for the consideration of Government, that I have been since the year 1853 experimenting upon various indigenous vegetable products with the object of finding a material adapted for the manufacture of paper, and which could be obtained in quantity and at a cheap cost. And I am now able to say that I have succeeded in manufacturing the accompanying specimens of paper from a shrub which grows plentifully in the district of Úva. This paper it may be observed possesses the property of combining less weight with greater tenacity than that made of rags, and is peculiarly suited for a tropical climate.

2. With the very rude machinery I have at present, I am prepared to manufacture four or five reams per diem by a process similar to that adopted in England for making paper by hand.

Common foolscap is the largest size that can be made at present, and the rate at which such paper could be supplied would probably be less than the rate at which similar paper is usually procurable by Government.

3. A small Factory has been set up near Badulla, and the work carried on by a friend of mine who lives on the spot; and if the present rough paper is adapted for any public purposes, arrangements could be made to meet the demand. And with the aid of Government in the shape of a regular demand for such description of paper, I should hope to be able to produce paper of a superior quality by means of better machinery.

4. It may perhaps be considered premature to bring forward this matter at its present stage to the notice of Government, but as I have already laid out a considerable sum of money in experiments, and it not being in my power to continue them, I now respectfully

---

* Davy, pp.

solicit the aid of Government in the manner about indicated; feeling assured that such an humble attempt in developing the resources of the country will meet with the fostering protection of the Government whom I serve.

I have, &c.,
(Signed) W. C. ONDAATJE.

*To the Hon'ble the Colonial Secretary.*

---

*Colonial Secretary's Office,*
*Colombo,* 13*th August*, 1856.

SIR,—Referring to your letter of the 19th ultimo, I am directed to transmit to you copy of one from the Committee on Stationery.

I have, &c.,
(Signed) P. W. BRAYBROOKE.

Mr. W. C. ONDAATJE, Badulla.

---

*Stationery Committee,*
*Colombo,* 18*th August*, 1856.

SIR,—In reply to your letter of the 31st ultimo, forwarding for report one from Mr. W. C. Ondaatje, accompanied by specimens of paper made by him in Úva, we have the honor to state that in our opinion, the successful results which have attended Mr. Ondaatje's praiseworthy efforts to manufacture paper in this Island, are most creditable to him and deserving of every encouragement.

Of the specimens herewith returned those marked No. 1, 2, and 3 might be rendered applicable to many useful purposes, such as, for making envelopes and printing licenses, permits, way-bills, &c., while No. 4, would answer very well as blotting paper, and might probably be improved if made a little thicker.

In order however to ascertain whether this paper is likely to supersede the use of that at present applied to the purposes named, it will be necessary for Mr. Ondaatje to state the cost at which he can undertake to deliever it. We would further recommend that with this information a ream of the best description cut to size and of uniform colour, also, a ream of the blotting paper, be sent to the Commissariat Department that a fair trial may be made with it, and its utility more fully reported on.

We have, &c.,
(Signed) F. SAUNDERS,
,, JOSEPH HIGGS,
,, W. T. LAYARD.

(True Copy.)
(Signed) P. W. BRAYBROOKE.

*To the Hon'ble the Colonial Secretary.*

*Assistant Govt. Agent's Office,*

*Badulla,* 31*st January,* 1857.

Sir,—I have the honor to enclose specimens of paper manufactured by Mr. Medical Sub-Assistant Ondaatje.

2. His very praiseworthy exertions have been unceasing during the last three years. Considering that he has worked alone and against many disadvantages, there can be no doubt that his success has been very great. He has expended a large sum of money, near £200, in testing his experiments, and is on the point of giving up any further prosecution of them, in consequence of the want of machinery for reducing the fibre into fine pulp, the present manual labour for that purpose so greatly increasing the cost of the material as to preclude its competing, as an article of commerce, with other inferior fibres.

3. Though he is obliged for the present to abandon all thoughts of exporting the fibre to England, he is able to manufacture the paper, of which I enclose you specimens, in some quantity, and at very reasonable rates.

4. The headmen in all districts are now required to send returns, &c., which it is impossible they can do on olas; yet no paper is allowed them, and they are obliged to purchase it at their own cost.

Paper No. 1 and 2, 25 reams a month.
Blotting paper, 30 reams a month.
No. 1 paper:
In Colombo 6*s.* 6*d* per ream.
In Kandy 5*s.* 6d. per ream.
In Badulla 5*s.* per ream.
No. 2 paper:
In Colombo 5*s.* per ream.
In Kandy 4*s.* 6*d* per ream.
In Badulla 4*s.* per ream.

5. The paper marked No. 1 and 2 can be supplied by Mr. Ondaatje, in the quantities and at the prices mentioned in the margin, much cheaper rates than lumberhand, (than which it is scarcely inferior in texture and to which it is superior in toughness,) is furnished to Government; which I believe is 7*s.* 6*d.* per ream. He could also manufacture paper of demy size.

6. There can be no question, I think, that it is not right to call on headmen to make returns which require paper, and not to supply them with paper for the purpose. I have the honor to suggest, therefore, that you should, if you concur with me in my views on this subject, recommend to Government that Mr. Ondaatje be employed to supply paper for this purpose; for superseding the use of olas in the Kachcheries generally, and for any other use to which his paper can be put. Either description of paper would answer excellently for forms, vouchers, returns of births, deaths, population lists, and division officers' books; and the blotting paper (of which I enclose

Blotting paper.
In Colombo 8*s.*
In Kandy 7*s.* 6*d.*
In Badulla 7*s.* 6*d.*
N.B.—Blotting paper is supplied to Government at 13*s.* 6*d.*, I believe.

a specimen,) I prefer to that supplied by Government, and it possesses the additional recommendation of being very much cheaper, as the note in the margin will shew you. Were it a little thicker it would be perfect.

7. I feel sure that His Excellency the Governor will be inclined to look favourably on Mr. Ondaatje's praiseworthy exertions, supported, as I hope they will be by your recommendation, and I trust that he will, if possible, be encouraged in his efforts to develop the resources of the district ; since from the results of his experiments, there is every reason to believe the Colony will really benefit by his prosecution of them.

I have &c.,
(Signed) J. Bailey,
*A. G. A.*

*To the Government Agent, Kandy.*

---

*Government Agent's Office,*
*Kandy*, 26th *March*, 1857.

Sir,—With reference to your letter No. 23 of the 31st January last, relative to the paper manufactured by Mr. Medical Sub-Assistant Ondaatje, and enclosing specimens thereof, I have the honor to annex for your information copy of a letter addressed by me to the Honorable the Colonial Secretary on the subject.

I have, &c.,
(Signed) W. D. Wright,
*for Agent.*

*To the Assistant Govt. Agent, Badulla.*

---

*Government Agent's Office,*
*Kandy, March*, 1857.

Sir,—I have the honor to annex copy of a letter No. 23, of the 31st January last, from my Assistant at Badulla, relative to the paper manufactued by Mr. Medical Sub-Assistant Ondaatje, enclosing specimens thereof, which I also beg to enclose.

2. Since they were received by me, I have had the quality of the paper marked No. 1 tested, and it will be seen that it receives printing and writing inks equally well.

3. Were I in a position to show that the paper now forwarded is cheaper than what is at present supplied to Government, for use in the public offices in the Central Province, I would be happy to support Mr. Bailey's suggestion, that Mr. Ondaatjie be requested to supply the paper as required. But I fear that such is not the case,

nor is it likely to be so, while Mr Ondaatje's machinery for reducing the fibre into pulp continues to be so defective.

4. I can therefore only submit these papers to the Governor, with the expression of my hope, that His Excellency will be able to obtain for Mr. Ondaatje, the active co-operation of other parties, in his praiseworthy attempts to develop, what may ultimately prove to be, a valuable Island manufacture.

I have, &c.,

(Signed) E. Rawdon Power.

[True Copy.] *Agent.*

*To the Hon'ble the Colonial Secretary.*

---

*Assistant Government Agent's Office.*

Sir,—With reference to the 3rd paragraph of the letter to the Colonial Secretary, copy of which was annexed to your letter No. 581 of the 26th ultimo, I have the honor to invite your attention to the 5th paragraph of my letter of the 31st January, No. 23.

2. In that letter I shew that Mr. Ondaatje professes himself ready to supply paper scarcely inferior to lumberhand, and excellent blotting paper, at prices considerably lower than paper of similar description is supplied to Government, and I now annex a Statement shewing in a tabular form the particulars of his offer.

3. I venture to suggest for the consideration of Government, whether it would not be worth while to give Mr. Ondaatje an opportunity of proving the value of his discovery, by permitting him to supply paper to the Kandy and Badulla Kachcheries, to a limited extent, provided he can give good security for the fulfilment of his engagement.

I have, &c.,

(Signed) J. Bailey.

*To the Government Agent, Kandy.*

*Statement referred to—*

| Description of Paper. | By whom supplied. | Cost per Ream. | | | Savings per ream to Govt. on No. 1 paper & blotting paper, if supplied by Mr. Ondaatje. | | |
|---|---|---|---|---|---|---|---|
| | | Colombo. | Kandy. | Badulla. | Colombo | Kandy. | Badulla. |
| | | *s. d.* | *s. d.* | *s. d.* | | | |
| Lumberhand... | Commissariat | 7 6 | | | | | |
| Blotting paper | Do. | 13 4 | | | | | |
| Paper No. 1... | Mr. Ondaatje | 6 6 | 5 6 | 5 0 | | | |
| Do. ,, 2... | Do. | | | | | | |
| Blotting paper | Do. | | | | | | |

*Diwitotewelle, 27th March,* 1857.

DEAR SIR,—I have directed that a copy of the letter which Mr. Power addressed to Government, respecting your paper, should be sent you. This is in reference to the letter which I wrote some time before the Governor came to Badulla. I can't help thinking Mr. Power is under some mistake, and that your paper *is* cheaper than the lumberhand, and blotting paper supplied by Government. Please send me again (for I have left my memorandum in Badulla,) the prices of your and Government paper.

The Governor shewed me a letter he had written to the Under-Secretary of State, transmitting specimens of your paper and pulp, and strongly recommending your invention to his notice.

I have, &c.,
(Signed) J. BAILEY,
*A. G. A.*

W. C. ONDAATJIE, Esq., Badulla.

---

*Assistant Govt. Agent's Office,*
*Badulla, 5th June,* 1857.

SIR,—With reference to former correspondence, I have the honor to annex for your information, copy of a letter No. 207, dated the 2nd instant, from the Government Agent, Kandy, to my address.

I have, &c.,
(Signed) J. BAILEY,
*A. G. A.*

W. C. ONDAATJIE, Esq., Badulla.

---

No. 207.

*Government Agent's Office,*
*Kandy, 2nd June,* 1857.

SIR,—With reference to your letter No. 112, of the 7th April last, relative to the paper manufactured by Mr. Medical Sub-Assistant Ondaatjie, I have the honor to inform you, that I have submitted the whole Correspondence to Government, with a suggestion that the Deputy Commissary General be requested to report upon the subject.

I have, &c.,
(Signed) E. RAWDON POWER,
*Agent.*

*The Assistant Govt. Agent, Badulla*

---

No. 413.

*Government Agent's Office,*
*Kandy, 12th September,* 1857.

SIR,—I have the honor to forward copy of a letter No, 422, of the 3rd instant, from the Honorable the Colonial Secretary, and of the enclosure

therein referred to, on the subject of the paper manufactured by Mr. Ondaatjie, and to request that you will be so good as to communicate the same to him.

I have, &c.,
(Signed) W. D. WRIGHT,
*for Agent.*

*The Assistant Govt. Agent, Badulla.*

---

No. 422.

*Colonial Secretary's Office,*
*Colombo, 3rd September*, 1857.

SIR,—With reference to your letter No. 141, of the 26th March last, I am directed to transmit to you a letter received from the Deputy Commissary General, on the subject of the paper manufactured by Mr. Ondaatjie, and to request that the same may be communicated to him. That officer has been instructed to pay Mr. Ondaatjie for the paper supplied by him.

I have, &c.,
(Signed) C. J. MACCARTHY.

*The Govt. Agent, Kandy.*

---

No. 207.

*Deputy Commissary General's Office,*
*Colombo, 25th August*, 1857.

SIR,—The Correspondence herewith returned from the Government Agent at Kandy, and his Assistant at Badulla, respecting the specimens of paper manufactured by Mr. Ondaatjie, was referred to me with your letter of the 5th June last, and I should have replied to it sooner, but that I waited to be able to examine the paper lately received from England, and in the hope that the Invoice shewing the latest prices of paper would have arrived; but it has not yet reached me.

2. It appears to me that there are three distinct questions raised in the Correspondence.

1st.—The substitution to a certain "extent" (a difficult term to define) of Mr. Ondaatjie's papers for the commoner descriptions of paper, such as Lumberhand, Common Foolscap, and Blotting Paper, which are now imported from England.

2nd.—The proposal to issue free of payment Mr. Ondaatjie's paper to headmen in the districts for returns, or other documents for which either *olas* are now used, or for which they are not allowed stationery.

3rd.—The comparative price between Mr. Ondaatjie's paper and imported paper.

3. It appears to me that the specimens of paper forwarded with the Government Agent's letter of 26th March last, (No. 1, here-

with returned) are not equal in quality to the specimens forwarded in November last, just before I returned from England. Some of these latter specimens (No. 2) are herewith enclosed.

I have also put together some specimens of English and other imported paper, with the prices marked (No. 3).

4. With regard to the quality of Mr. Ondaatjie's papers, it appears to me that even now they are much better than a great part of the paper manufactured in India, and extensively used in public offices there. I would however offer the remark that as Mr. Ondaatje has made so much progress towards complete success in the manufacture of common paper, he might possibly with improved machinery be able to extend that improvement, by making the paper thinner and lighter. At present, it weighs rather more than half as much again as English paper of the same description and size. If the thickness and weight were reduced, I think it might become serviceable paper.

5. With regard to the second point, if His Excellency the Governor should deem it right, that stationery should be issued to the headmen for their returns, &c,, doubtless, Mr. Ondaatjie's paper would answer the purpose exceedingly well. I was under the impression that one of the reasons given by Mr. Buller, the former Government Agent, for his large demand for stationery, was, that the numerous returns required to be furnished by the headmen required that stationery should be issued to them.

6. Lastly, with regard to comparative price, I should for the present exclude Colombo from consideration, but if Mr. Ondaatjie can supply paper equal, or rather superior, to the best of the specimens of common paper furnished by him, at 5*s.* a ream at Badulla, and at 5*s.* 6*d.* a ream at Kandy, and if he could also supply blotting paper made of the full size of the English blotting paper at a price increased in proportion to the increase of size, (taking his present specimen as worth 7*s.* at Badulla, and 7*s.* 6*d.* at Kandy), I strongly recommended that some of it should be supplied for the use of the Government Agent at Kandy, and of his Assistant at Badulla.

7. The envelopes I do not at present consider necessary, as half a sheet of paper answers the purpose quite as well and can be used twice, which is not the case with envelopes, added to which 2*s.* 6*d.* per 100 is too dear for them, as they can be made here for the Colonial Secretary's Office at 2*s.* a hundred.

8. In conclusion, I would beg to suggest that Mr. Ondaatjie be invted to endeavour to submit specimens of paper of a thinner

description for writing, but of the same size as those submitted last year, and also blotting of the size of the sheet of English blotting paper enclosed. If the new specimens be approved of, probably His Excellency might be disposed to allow the paper to be used by way of experiment in some of the public offices at Badulla and Kandy, in order to obtain the opinion of public officers there as to the prospect of their being able to use it with advantage.

9. Having received altogether about 29 quires of the Common Foolscap paper, and about 13 quires of Blotting paper, prepared by Mr. Ondaatjie and sent down here as specimens, I would suggest that he should now be paid for this experimental paper, at the rate proposed by him, namely, 6*s.* 6*d.* a ream for the former paper and 8*s.* for the latter; and I may probably be able to use up this quantity of it in my own department.

I have, &c,

(Signed) W. D. BERNARD,

*D. C. G.*

# THE DIFFERENCE BETWEEN THE PALI AND THE PRAKRIT-MAGADHI OF VARARUCHI.

By James D'Alwis, Esq., *Assistant Secretary*.

Pali is the name given in Ceylon, and some countries in western Asia, for the dialect of the Buddhist Scriptures, which was cultivated in the kingdom of *Mágadha,* or modern Behar, about the 6th century before the Christian era. The Siṇhalese, like the Burmese, use both *Páli* and *Mágadhì* to express their sacred language; whilst Indian Grammarians designate one of the dramatic dialects, the *Màgadhì,* and also identify it with the language of *Mágadha*.* Although, therefore, the *Páli* and the *Mágadhì* are names for one and the same dialect; yet the language defined by Pràkrit Grammarians as *Mágadhì* is essentially different from the *Mágadhì* or *Páli* of Ceylon, which, from the time it was banished from the country whence it derived its name, remains fixed as a dead language in this Island, unaffected by those changes which as a spoken language it has undergone in its migrations in India,—assuming at one time the style (as in the Nepál Scriptures) of an "indescribable milange in which incorrect Sanskrit bristles with forms of which some are entirely Páli and others popular";† at another, the form of the Pillar dialect of Asóka's reign; and at last, the *Màgadhì* of the *Jains*.

These differences establish many important facts in the history of Asiatic languages; and moreover, unsettle the

* See Cowell's Pràkrit Prakàsa, p. 179, *et seq.*

† L'Histoire du Buddhisme Indien, by M. Burnouf, p. 105.

opinion generally received at the present day, as to the age of the dramatic literature, and of Vararuchi, whom some have erroneously regarded as identical with *Kàtyàyana.**

To such important questions, however, it is imposible to do justice within the confined limits of periodical literature. The object, therefore, of the following observations is, simply to shew the difference between the *Páli*, otherwise called *Mágadhì*; and the so-called *Mágadhì* of the Pràkrit Grammarians.

Vararuchi, in his *Pràkrit Prakàsa*, which has been translated into English by Dr. Cowell, devotes a Chapter containing 15 Sections, to exhibit the differences between the *Màgadhì* and the *Sanskrit*; and the following observations are confined to comparisons between those laws and the distinguishing characteristics of the Páli.

1. The first rule of Vararuchi is SHASOH SAH. In the Páli there is no *s*; it has only the dental sibilants. The inapplicability of the rule, which states that in the peculiar dialect of Pràkrit termed Màgadhì, 's is substituted for *sh* or *s*' is therefore self-evident.

2. JO YAH. The occasional substitution of *y* for *j* is no more a peculiarity of the Páli than of the Sanskrit or Siṇhalese; *e.g.*, *yamini* or *jamini* in Sanskrit ; *yàma* or *jàma*, Siṇhalese 'night.' The usual Páli *nija* is written in the Suttas with a *y*, as *niyan puttan* 'own son.' Instances like these, are exceptions, not the rule, in those two languages. But neither in the instance given by Vararuchi, nor in the great majority of Sanskrit words with a *j*, is it changed into a *y* in the Páli. The reverse of what is given by Vararuchi may be regarded as the rule. Thus, *jàyate* 'he is born,' is the same in the Pali, and is not changed into *yàyade*. So likewise *ràja* is *ràja*, and not *ràya*, 'king ;' *gaja* is *gaja* but not *gaya*, 'elephant'; *vajra* is *vajira*, but not *vayara*, diamond.' It is true that in words like *paryùshana* the

* Cowell's Pràkrit Prakàsa, p. vii.

Pali form is *payyùshana*, and not *pajjausana*, as in the common Pràkrit. This peculiarity in the Pali, however, does not indicate a change from *j* to *y*, but from *r* to *y* ; the reason of which will be found noticed elsewhere.

3. The next rule, CHAVARGASYAS PṚISHTATA TATHOCH ARAṄAH, seems to refer to a nicety in the pronunciation of the palatal letters, which we do not perceive in the Páli ; and therefore proceed to the

4. HṚIDAYASYA HADAKKAH. This is equally inapplicable to the Páli. *Hṛidaya*, 'heart' never becomes *hadakka*, but *hadaya* in Páli ; so likewise *hrasva*, 'short,' is not *hadàsva* but *rassa* ; *hrí*, 'shame,' is not *hida* but *hirí*.

5. RYARJAYOR YYAH. The substitution here spoken of *yy* for *ry* and *rj* may be regarded as the exception (and that of very rare occurrence) rather than the rule in the Páli. Thus *kàryam*, 'to be done,' is not *kayye* but *kariyan* ; and *durjana*, 'wicked,' is not *duyyana* but *d--jana* in the Páli. So again, *vírya*, 'exertion,' becomes *viriya*; *bhàrya, bhariya*, 'wife': *aiṣwarya, issariya* 'prosperity,' *dhairya, dheriya* 'exertion'; and also *garjana* becomes *gajjana*, 'noise.'

6. KSHASYA SKAH. This is again different in the Páli. Thus *ràkshasah*, 'demon,' does not become *laskose* but *rakkhasò* ; nor *dakshah*, 'clever,' *daske*, but *dakkhò*. So likewise *vṛiksha*, 'tree,' becomes *rukkha* in the Páli ; *kshamà, kamà*, 'forgiveness'; *dakshiṇa, dakkhiṇa*, 'south'; *kshura, khùra*, 'razor' *kshetra, khetta* 'field.' This peculiarity will be found explained in another part of our observations.*

7. ASMADAS SAU HAKE HAGE AHAKE. The Sanskrit *ahaṉ baṇàmi*, 'I speak,' is the same in the Páli ; and does not become, as stated here *hake, hage*, or *ahake, banàmi*.

8. ATA IDETAU LUKCHA. The Sanskrit *etad* (root) *eshah* (nom :) is said to be changed in the Màgadhí into *esa*, and *su* being added to it=*èsa su* ; and the latter affix being elided, the *a* in *esà* is changed into *i* or *e*. This is not a peculiarity

* *Vide infra.* § 10.

of the *Páli* in which *èta* (root) *èsù* (nom :) becomes *èsò ràjò*, (*esha ràjà* Sank.,) 'this king,' and not as in the Pràkrit Màgadhì *èsı làà* ; and *esha purushah* Sanskrit, becomes *esò purisò* in the Páli, but not as in the Pràkrit Màgadhì *esà pulise*, 'this man.'

9. KTANTAD USCHA : which is rendered by Dr. Cowell into English as follows :—*u* is substituted when the affix *su* follows a word ending with the affix *kta* ; and also (as we infer from the *oha* of the Suttas) we may optionally use the *i* or *e* of the preceding Suttas, or even elide the affix ; as *hasidu* or *hasidi*, *haside hasida*, for *hasitah*, 'smiling.' It is only sufficient to state here that the Páli knows no such thing, and that the Sanskrit *hasitah* is in the former simply changed into *hasito*.

10. NASO HO VA DIRGHATWAMCHA. That is to say *ha* is optionally substituted for *nàs*, the affix of the genitive singular, and at the same time the preceding vowel is lengthened, as *pulisàha* or *pulisàssa dhane* for *purushasya dhanam*, 'the man's wealth.' The Páli form of this is *purisassa dhanam*, wherein the Sanskrit inflexion *sya* is changed to *ssa*, for the simple reason that the Páli dislikes the union of two consonants of different classes. It is further remarkable here that *dhane* of the Pràkrit-*Màgadhî* is *dhanam* (neuter) both in the Sanskrit and Páli, in which, moreover, the cerebral *n* is not used.

11. ADIRGHAS SAMBUDDHAU. It is to be inferred from the examples given under this rule, that in the Pràkrit-Màgadhì dialect, the vocative inflexion *a* both in the singular and plural number is long. In the Páli, however, the termination of the vocative *singular* may be either long or short, as *purisa àgachchha* or *purisà àgachchha*, 'O ! man come.'*

12. CHITTHASYA CHISHTHAH. In shewing the difference of the Páli from the Pràkrit-Màgadhì, it is here sufficient simply to exhibit the Páli forms of the given examples.

* See Clough's Bàlávatàra, p. 19.

1. Purushah tishṭhati.* *Sanskrit*
2. Puriso tiṭṭhati. *Páli*
3. Pulisè chishthadi. *Mag: Prakr.*

13. KRINMRINGAMAM KTASYA DAH. Here again we cannot exhibit the difference of the Páli from the Màgadhì Pràkrit, better than by placing the given examples in juxtaposition with their Páli forms.

| | | | |
|---|---|---|---|
| Sanskrit | *kṛitah*, 'done' | *mṛitah*, 'dead' | *gatah*, 'gone.' |
| Pali | *katò* | *matò* | *gatò.* |
| Prak-M: | *kadè* | *madè* | *gadè.* |

14. KTWO DANIH. The following comparative view of the examples given under this rule, shows the relationship of the Páli to the Sanskrit to be far nearer than that of the Pràkrit-Màgadhì.

| | | |
|---|---|---|
| Sanskrit, | *shadvà gatah* | *kritvà gatah* |
| Pali, | *sahitvà gato* | *katvà gatò* |
| Prak-M. | *sahidàni gade* | *karidàni àade.* |

15. SṚIGALASYA SIALASIALESIALAKAH, the difference between the Sanskrit *sṛigàlah*, and the Pali *sigalo* is simply that occasioned by the absence of the Sanskrit *ri* in the latter language. But Vararuchi gives the three following forms into which that word is changed in the Màgadhì-Pràkrit, *siàlà siàlè siàlàkè.*

* 'The man stands.'

# ON HEALTH AND DIET, WITH ESPECIAL REFERENCE TO CHILDREN AND YOUTHS, IN CEYLON.

By Barcroft Boake, b.a., *Vice-President, Asiatic Society, Ceylon.*

None who have had any opportunities of acqainting themselves with the past and present state of Ceylon, and who have taken any pains to avail themselves of those opportunities, can have failed to observe that the character of the climate has materially improved, as regards its effects upon the health and longevity of Europeans resident in the Island.

In former days, Trincomalee was regarded as so pestilential that it was the custom of Insurance Offices to make a special exception with reference to it stipulating that the policies which they issued were not to hold good if the person insured took up his residence there. It is not many years, indeed, since a gentleman who was making a voyage round the Island, felt himself compelled to remain on board during the whole time that the vessel in which he was a passenger remained in that port, fearing lest, by landing there he should vitiate the insurances which he had effected to a considerable amount upon his life. Many persons now prefer the climate of Trincomalee to that of Colombo.

In like manner, the road between this and Kandy was known to be very dangerous to any travellers who passed over it otherwise than rapidly and during the bright hours of the day. There are sundry grave-stones which stand close to

each other in the Galle Face Burying Ground, which are said to be the melancholy record of the effects of the march of a single Regiment from Kandy to Colombo. The loss of human life in the construction of that road, is said to have been something fearful, and that, not only amongst the native labourers, but also amongst the European officers under whom they worked. Even within the last twenty years it was commonly stated that the Resthouse-keeper at Am̃bépussa was obliged to keep up a double set of servants, as one-half were always sure to be laid up with fever. That road does not now bear so bad a character ; and the town of Kandy itself is also believed to have improved very much in salubrity, since it came into the possession of the English.

Much of this improvement is no doubt attributable to alterations which have taken place in the physical features of the country. Forests have been felled, swamps drained, and the observance of some sanitary regulations enforced upon the native inhabitants.

Something, too, perhaps not a little, is due to improved habits of life on the part of the European residents. The few who have been long enough in the Island to remember the state of things which has now, thank God, passed away, and is in great measure forgotten, have strange tales to tell of the excesses which were then committed by men filling positions, the present occupants of which, if their own better principles did not (as they doubtless would) prevent them from imitating the bad example of their predecessors, would be driven from office and from society by the force of public opinion.

The day is gone by when the Officers on the Staff of the Governor and Commander-in-Chief—appointments which in those days were always combined—would think it consistent with their position to endeavour, when invited, in attendance upon the Governor, to dine with an ecclesiastical dignitary to entrap their host into drinking to excess ; or

when, supposing that any persons could be found so lost to right feeling as to make such an attempt, their host would feel it necessary to have recourse to an artifice, in order to preserve sobriety which became him as a clergyman, without being guilty of what would be regarded as inhospitality towards his guests. The state of things of which such anecdotes are indicative has passed away, never, it is to be hoped, to return, and, as a consequence of its departure, liver complaints and fevers are less frequent and less deadly; and it is now felt that, when temperance is observed, and ordinary prudence exercised in avoiding what are known to be causes of disease, life is not, to most constitutions, materially more insecure in this country than in Europe. It is quite possible that we may still have something to learn on this head, and that an improvement in medical practice, together with an increased diffusion of the knowledge of those physiological principles on which the preservation of health depends, may lead to such results as will induce Insurance Companies to grant policies on terms still more favourable than those which they at present offer to persons resident in Ceylon. It is not my intention, however, at present to enter upon this wide field, but merely to lay before you certain statistics connected with one branch of the subject, which my position has enabled me to procure.

While the increased security of the life of the adult European resident in Ceylon is generally admitted, it is still felt to be a hazardous experiment to attempt to bring up the children of European parents in this climate; and many of us have had painful experience in our own families of the necessity of sending our children to England, when they have just arrived at that age when parental care is beginning to be of the greatest importance for the formation of their characters, and when the domestic affections can best be cultivated. If this could be shewn to be a mistake, arising

from an injudicious mode of treating our children, there are, I suppose, few European parents resident in the Island, who would not hail the discovery as removing one of the most painful circumstances attendant upon the expatriation which is their own lot in life. Now, this is just the conclusion to which I have been led, by an examination of the records of the Asylum for Military Orphan Boys.

That Institution has been established for about twenty years, during the last eighteen of which it has been under superintendence. There are at present 22 boys resident in it; there have been as many as 31 or 32 at one time; the average being not I think under the present number. During the last eighteen years, only four deaths have occurred in the establishment, two of which cannot be fairly regarded as belonging to its ordinary rate of mortality, inasmuch as one was the result of leprosy, (which must be regarded as an entirely exceptional case,) while the other was that of a deformed idiot, labouring under confirmed disease, who, being left entirely destitute, was received into the Asylum merely that he might die there in peace. The ordinary rate of mortality, therefore, making these deductions, is very little over one half per cent. per annum; and even if we include the two extraordinary cases which I have mentioned, it will amount to no more than one in ninety-nine; and even the higher of these rates can scarcely be regarded as indicating any peculiar unhealthiness in the climate. Nor does the appearance of the boys lead to a different conclusion from that suggested by the low rate of mortality amongst them. They do not, of course, exhibit the florid complexions which are looked for in healthy school-boys in Europe; but they are deficient neither in strength, health, nor spirits, and amongst them might be pointed out some who, physically, are inferior to few who have been brought up in a more temperate climate. I could name one young man, who having entered the Asylum at the age of 12, left it when he was 19, in order to be employed on a Coconut

Estate near Jaffna; after having been about four years in the Northern Province, he called upon me about a year ago, when on his way to take charge of an estate near Colombo. His appearance was such, that I remarked at the time, and the remark was confirmed by others who saw him, that had he just arrived by steamer at Galle, he would not be regarded as a bad specimen of a healthy European.

Another lad, the son of a European father by a half-caste mother, who, according to the record that we have of him in the Asylum, cannot now be more than nineteen, was apprenticed by me a few years ago to an Apothecary in Kandy. Not liking his employment, he ran away. After fruitless inquiries in several quarters, and getting one or two vessels searched, I gave him up as one of whom I was not likely to hear again. A short time ago, however, I received a letter from him, giving me some account of his adventures, and informing me that he was, when he wrote, a Serjeant in H. M. 24th Regiment, at present stationed in the Mauritius.

These facts seem to shew that the children of European parents can be reared in this country without any greater mortality than is usual in more favoured climates, and that those so reared are not inferior in spirit and energy to others of the same race. Why is it that we find the result so different with our own children? I believe the true answer to this question to be, that we do not follow a judicious system in our treament of them. We pamper their appetites—we indulge them with improper food at improper times—we coax them to eat when their stomachs reject the food that we press upon them, under the mistaken notion that the exhausting character of the climate renders necessary a larger supply of food than would suffice under a lower temperature.

Every thing at the Orphan School, on the other hand, is done by rule—no food of any kind is given, except at appointed hours. Unwholesome food is at all times carefully excluded. No indulgencies, in the way of a more delicate

diet, are allowed, except by the order of the Medical attendant, and then nothing more is given than he prescribes.

A Dietary was laid down for the Institution by the late Dr. Rowe, who was Principal Medical Officer in Ceylon, about ten years ago. A few trifling alterations have been made since then, and the subjoined table shews the manner in which the food of the boys is now regulated.

No extraordinary pains are taken to preserve the boys from exposure to the sun—indeed we are obliged, from the situation of the Asylum, to march them a distance of about a furlong at 8, 10, and 11 A.M., and again at 2 P.M. Their unusual health and strength is, I believe, under God's blessing, to be ascribed wholly to the judicious system that has been laid down for their management, and to the strictness with which that system has been adhered to.

If the publication of these remarks should have the effect of leading fond mothers to desist from the mistaken practice of pampering and over-feeding their children, and to adopt a regular and judicious system of feeding them, I entertain no doubt that the result will be the prevention of much of that suffering consequent upon the early breaking up of families, which, in too many instances, are never reunited on earth, and the members of which can scarcely ever acquire afterwards that domestic intimacy with each other, which is the result of early habitude.

---

*Dietary.*

7 A.M. Coffee, bread.

10 A.M. Coffee, bread, every morning. Eggs, jelly, butter, plantains, in rotation.

2½ P.M. Rice and beef-curry every day, occasionally roast beef and vegetables.

A bread pudding every Sunday.

5 P.M. Coffee and bread

*Quantity of Provisions allowed daily for each boy.*

| | |
|---|---|
| Beef, | $\frac{3}{4}$ lb. |
| Bread, | 14 oz. |
| Coffee, | $\frac{1}{4}$ oz. |
| Rice, | $\frac{1}{2}$ pint |
| Salt, | $\frac{1}{4}$ oz. |
| Sugar, | 2 oz. |
| Milk. | $\frac{1}{4}$ bottle. |

When eggs are given, each boy has two.

When butter is given, $1\frac{1}{2}$ lb. is divided amongst twenty-two.

12 DEC 1900
BRITISH MUSEUM
NATURAL HISTORY.

# APPENDIX.

# PROCEEDINGS OF MEETINGS.

## GENERAL MEETING.

*December 17th, 1859.*

*Present:*

J. Sterling, Esq., Acting Chief Justice, in the Chair.

The Secretary read a list of the books and Periodicals received since the last meeting, viz :—

| | | |
|---|---|---|
| Calcutta Review ... ... | ... 2 | Nos. |
| Journal of Madras Literary Society | ... 2 | ,, |
| Do Bombay Geographical Society | ... 1 | ,, |
| Do Asiatic Society of Bengal | ... 1 | ,, |
| Do Asiatic Society of Shanghai | ... 1 | ,, |
| Engineer's Journal ... ... | ... 3 | ,, |

On the system of Phonetic Alphabets, by J. E. Thompson, M.C.S., from the Author.

The following Contributions to the Museum were announced :—

Twelve specimens of Medicinal Oils of Ceylon, from Mr. C. P. Layard.

A number of Dyewoods and Dyestuffs, from Mr. H. Mead.

Samples of Plantation Coffee, from various gentlemen.

A Jungle Cat, from Lieut. Robertson.

A Cobra Capella, from Mr. J. Thompson.

The following gentlemen were then ballotted for, and declared elected Members of the Society :—

| | |
|---|---|
| Boyd Moss, Esq., F.R.C.S. ... | Proposed by Mr. J. Capper.<br>Seconded by Mr. Jas. Alwis. |
| J, F, Dickson, Esq., C.C.S. ... | Proposed by Mr. J. Capper.<br>Seconded by the Rev. B. Boake, |

| | |
|---|---|
| F. B. Mainguy, Esq., R.E. .. | Proposed by the Rev. B. Boake.<br>Seconded by Mr. J. Maitland. |
| R. A. Robinson, Esq., .. and | Proposed by Mr. J. Capper.<br>Seconded by Mr. C. A. Lorenz. |
| C. Hill, Esq. ... ... ... | Proposed by Mr. J. Maitland.<br>Seconded by the Rev. J. Thurstan. |

It was then moved and resolved, that Mr. C. P. Layard be elected President of this Society for the current year, in the room of the late Sir William Carpenter Rowe, and further, that the Rev. B. Boake, Mr. Lorenz, and Mr. Capper, do form a Sub-Committee to draw up a suitable expression of the Society's sense of the loss sustained by the death of its late President.

Mr. Maitland explained, that the sudden departure of Dr. Kelaart from Colombo, on special duty, prevented the reading of his paper on that day it would, however, be forthcoming at the General Meeting. He also exhibited a full-sized model of the iron and coir fencing proposed by Dr. Kelaart to be employed for the protection of the young Pearl Oysters on the freshly-formed beds.

Mr. Boyd Moss then read a paper on "Ceylon as a residence for Europeans, considered in reference to health."

## GENERAL MEETING,
*July 28th, 1860.*

*Present:*

The Honorable the Chief Justice, as Vice-Patron, presided.

Sir E. Creasy, on taking the Chair, said :—" It is with great pride and pleasure that I have accepted the offer so kindly conveyed to me, through my friend Mr. Lorenz, of this honorable position in your Society. Although my own literary pursuits have been chiefly directed to the histories and languages of Europe, I have always taken a deep interest in Oriental ethnology, and in the historical evidences which the literature and the architectural monuments of the East supply, as to the early habitations and movements of the human race. It has also been my good fortune to have among my near connexions and friends, men, to whom the study of Asiatic antiquities and languages has been for years a favorite occupation; and among whom I have frequently heard the most important questions connected with Oriental lore discussed with ample learning and keen sagacity, and with all the freedom and vivacity of unrestrained familiar conversation. As soon as I was aware that Ceylon was to be my future

residence, I determined to endeavour to join this Society; though I fear that the nature of my principal former studies, and the requirements on my time which my duties will create, are likely to make me a very inefficient member of your Association. But I shall, at least, watch your labours with cordial good-will and deep attention. Ceylon and Siŋhalese literature are so pre-eminently rich in ancient monuments and ancient records, that it is here we may hope to see good work done towards deciding many questions now earnestly discussed by the scholars and philologists of England and Germany.

Especially there is the great dispute which Gibbon indicated, and which is now warmly revived, whether the East really gave arts, letters, and civilization to the West, or whether all that is of any value in Oriental literature and art, was not derived from a north-western source. I intimate no opinion of my own on this or on the other great questions, as to the primary seats and early currents of population. But I know that they are questions on which many master minds are now intent, and I know that I see here an Association peculiarly qualified to throw light on them.

Your researches in Statistics, in Geology, and in the Fauna and Flora of this remarkable Island, command also the deepest interest. They have indeed an immediate practical value, which ensures for them the regard of many who would pay comparatively little heed to merely literary topics. I am sure that the time which you devote to the furtherance of the objects of this Society is employed with utility to others as well as with intellectual benefit to yourselves. I once more cordially thank you for the gratifying manner in which you have enrolled me in your ranks, and pledge myself that I will do all in my power to deserve it."

The following gentlemen were then ballotted for, and declared elected Members, viz :—

| | |
|---|---|
| Col. Ouvry, C.B. ... ... | Proposed by Mr. J. Capper.<br>Seconded by Mr. C. P. Layard. |
| Mons. P. Grimblot. ... | Proposed by the Rev. B. Boake.<br>Seconded by Mr. J. Capper. |
| W. N. D. Rajapakse, Esq. | Proposed by Mr. C. A. Lorenz.<br>Seconded by Mr. C. P. Layard. |
| The Rev. C. Merson. ... | Proposed by Mr. J. Maitland.<br>Seconded by Mr. Jas. Alwis. |

The Secretary placed on the table the following list of Donations to the Museum :—

Twenty-three land shells from Mr. C. P. Layard; four New Zealand Pheasants, a specimen of Kandyan paper 40 years old, and three Ancient Siŋhalese Coins from the Honorable Major Skinner.

A set of Pearl Oyster Shells, of various ages, by the Secretary.

The following Books and Periodicals were reported as received since last meeting :—

A Report on Public Instruction in Bengal, from the Honorable the Colonial Secretary.

Meteorological Observations during the seven years ending 31st December, 1859, from R. Bullen, Esq., R.E.

| | | |
|---|---|---|
| The Asiatic Journal ... ... ... | 5 | Vols. |
| Report on the Natural History of the Pearl Oyster, by Dr. Kelaart ... ... ... | 1 | ,, |
| Romanic Alphabets ... ... ... | 1 | ,, |
| An Enumeration of Ceylon Plants, by G. H. K. Thwaites ... ... ... ... | 1 | ,, |
| The Calcutta Review ... ... ... | 2 | Nos. |
| Journal of the Asiatic Society of Bengal ... | 3 | ,, |
| Transactions of the Bombay Geographical Society ... ... ... ... | 1 | ,, |
| Journal of the Madras Literary Society ... | 1 | ,, |
| Journal of the Geological Society of London ... | 8 | ,, |
| Journal of the Statistical Society of London ... | 8 | ,, |
| The Engineer's Journal ... ... ... | 8 | ,, |

Major Skinner said, that he had received a communication from Sir W. Denison, the Governor of New South Wales, who was desirous that an exchange of specimens should take place between the Public Museum of Sydney and the Ceylon Asiatic Society, and he therefore begged to move the following resolution :—

"That the Curator and Secretary be requested to communicate with the authorities of the Museum at Sydney, with the view to establishing a system of Exchanges."

The resolution having been seconded, was carried.

Mr. J. D' Alwis called the attention of the Meeting to the fact that there were several Chapters of the *Maháwanso*, translated by the late Mr. George Turnour, that had never been published, in the hands of that gentleman's Executors. He wished to propose the following resolution, which was seconded and adopted :—

"That the Secretary be requested to communicate with the Executors of the late Mr. Turnour, with a view to obtaining their permission to print such translated Chapters of the Mahawanso as remain in manuscript in their hands."

The Rev. Mr. Boake submitted the following resolution :—

That the following gentlemen be requested to form a Corresponding Committee, for the purpose of entering into communication with Scientific Societies in Europe and elsewhere, viz :—

The Honorable the Chief Justice,
Mons. Grimblot,
Mr. Capper."

Seconded by Mr. Lorenz, and carried.

Mr. W. Ferguson exhibited a dwarfed specimen of *Melia Azedarach*, Lin., and a plant *Holcus Sorghum*, making a few remarks respecting them.

The genus *Melia* consists of trees, the *M. Composita*, or *Lunumidella* of the Sinhalese being well-known as a fast-growing and tall tree, the timber of which is so light, that it is generally used for outriggers to the fishing canoes, while the species of which a small specimen was exhibited, is well-known throughout Ceylon, as a tree generally from 10 to 20 feet in height, and commonly called the "Flowering Margosa," having large branched panicles of beautiful lilac-coloured flowers.

The small specimen shewn by Mr. Ferguson was taken up and dried early in May last, and was one of several plants raised from seeds sown only three months previously, (all of which struggled for existence during the late dry weather,) but only this one was observed to flower then ; but about a fortnight ago, six or seven more produced a single flower each in the same manner, some of them very large and partly monstrous.

The dried specimen shewn had still the cotyledons on ; when it flowered these were ½-an-inch from the ground, a small pair of opposite leaves 1 inch, and another 1½ from the ground, while eight alternate leaves occupied other 2 inches of the stem, and then came the last leaf about ¼ of an inch higher in the axil of which grew the sessile flower,—the whole height of the plant being only 3½ inches, the root, a single one, being about 5 inches long.

Mr. Ferguson considered this plant a good illustration of the principle, that flowers and seed vessels are merely modified forms of leaf.

In good soil and in ordinary weather, the plant in question would have become a small branching tree, but here its growth was arrested, and true to its vegetable instincts, if such a term can be used, it made desperate efforts to preserve its species by producing a flower. This flower occupies the place of the central bud of the plant ; it has no calyx, but the top leaf, in the axil of which it rests, has also departed from its normal form, having divided and grown round the flower, so as to form an involucre

for it. The rest of the flower, viz., petals, tube surrounding the stamens, the stamens and pistil, were a little different from their ordinary form, but in one sent to the Director of the Peradeniya Gardens the day before, the flower was much larger than ordinary, and was somewhat monstrous. These plants were grown in Mr. W. Ferguson's garden at Kollupitiya, and Mr. Ferguson has observed, that in some of them, the flowers and mid-leaf have dropped off, and the plants have taken a fresh start, but sending out two branches from the place just below where the flower was.

In connexion with the subject of dwarfed plants, Mr. Layard, the Government Agent for the Western Province, stated, that some years ago he procured from a native garden, a coconut plant of the common kind, about two Years old, which had flowers close to the ground.

The specimen of *Holcus* shown, was fully 12 feet high, and about one inch in diameter, having a large compact panicle of white seed on the summit, with several branches proceeding from the upper joints, while from the lower ones, clusters of aerial roots, like those of the screwpine, issued. The plant was taken from several growing in the garden behind the Government Offices in the Fort, raised from bazaar seeds, sown about three months previously.

Mr. W. C. Ondaatjie then read a paper on "Badulla, and its Productions," and Mr. J. D' Alwis an article on "Cinnamon."

---

## GENERAL MEETING,

*November 24th, 1860.*

*Present:*

The Rev. B. Boake, Vice-President, in the Chair.

| | |
|---|---|
| Rev. J. Thurstan. | Colonel Ouvry. |
| P. Coomarasamy, Esq. | J. D' Alwis, Esq. |
| Mons. P. Grimblot. | R. Dawson, Esq. |
| L. Nell, Esq. | J. Capper, Esq. |

The following Books and Periodicals were laid on the table :—Madras Journal, Pamphlet on the Dugong Oil, Engineer's Journal, Meteorological Register.

The Secretary called the attention of Members to the prospectus of Messrs. Schlagentweits's work on India and Upper Asia, forwarded by the publishers, and it was resolved that the work be subscribed for.

A Circular from the Secretary of State for the Colonies was also laid on the table, in which information was sought in respect to scientific works published in the Colony, Museums, &c. ; also a letter from Mr. D. Wilson,

handing a communication from the Batavian Society of Arts. Both these documents were referred to the Committee of Correspondence.

The Secretary laid before the Meeting copies of letters from the late Dr. Buist and Sir J. Emerson Tennent to the *Athenæum*, having reference to certain passages in the work on Ceylon by the latter, in which the presence of the Fresh Water Wells in the Jaffna Peninsula near the sea is accounted for, on the supposition that they are supplied from the sea; the water becoming deprived of its salt by the filtration through the coral mass around. Dr. Buist controverts this theory as opposed to the first principles of physics, whilst in reply, Sir Emerson Tennent urges the facts brought forward by De Witt, in the Philosophical Magazine, to shew that water containing considerable quantities of saline matter in solution, may, by percolating through great masses of porous strata during long periods, be gradually deprived of its salts to such an extent as probably to render even salt-water fresh. The publication of this controversy might probably lead to some further enquiry into the matter as regards the fresh-water wells at Jaffna.

The following gentlemen were then balloted for, and declared duly elected:—Mr. W. J. Sendall, Mr. W. C. Ondaatjie, Mr. C. P. D'Zilva, Mr. J. A. Caley, and Mr. R. Piachaud.

The undermentioned Papers were then read:—

"The difference of the Páli and Mágadhí dialects of Vararuchi," by Mr. J. D' Alwis.

"On Health and Diet, with especial reference to Children and Youths in Ceylon," by the Rev. B. Boake, B.A., Vice-President.

"On Hindú Philosophy," by Mr. Coomarasamy.

## ANNIVERSARY MEETING.

*Saturday, July 6th, 1861.*

---

*Present*:

The Rev. B. Boake, in the Chair.

| | |
|---|---|
| Colonel Ouvry. | J. Maitland, Esq. |
| R. V. Dunlop, Esq. | Rev. J. Thurstan. |
| P. Coomarasamy, Esq. | W. D. Rajapakse, Esq. |
| N. D. Schultze, Esq. | Dr. Misso. |
| W. C. Ondaatjie, Esq. | |

The Secretary proceeded to read the Report, as follows:—

In submitting their Report for the past year, your Committee have much pleasure in pointing attention to the steady increase in the Members of the Society, and especially to the fact, that amongst those who have joined during the present year, are gentlemen eminently qualified to advance the objects of this Institution.

Amongst the Papers read at the various meetings of the past season, may be found some possessing more than ordinary local interest,—on "Health and Disease of Ceylon"; on "Diet"; on "the District of Badulla and its Products"; and on "Cinnamon,"—whilst "Hindu Philosophy," and the "Pali Dialects" have formed the objects of other Papers. The Society has received several interesting communications from the Government, one of which directed attention to the increasing value of the oil obtained from the "Dugong," as a substitute for Cod Liver Oil, and will be found in the Appendix.

Your Society has been placed in communication with the Curator of the Public Museum of New South Wales, through Sir W. Denison, and it is hoped that this may prove the means of an interchange of specimens of the products of the two countries, to the advantage of both institutions. It is also in communication with the Batavian Society of Arts, to which body copies of the Journal have been sent. Your Committee have much pleasure in noticing the receipt from the Messrs. Schlagentweit of a portion of the great illustrated work which is to record theirtravels and observations in Upper India, and it has been resolved to recommend to you, that the abovenamed gentlemen be elected Honorary Members of your Society, with a view to mark the appreciation of their gift, and of the great labour and scientific research expended in their work.

The publication of the remaining chapters of the *Mahâwanso*, left in the hands of the Executors of the late Mr. George Turnour, has engaged the attention of your Committee, who have communicated to those gentlemen their desire to be allowed to publish the chapters in their hands, in the shape of an Appendix to the Society's Journal. To this request, however, no reply has yet been received.

The Society has also had its attention directed to the subject of "the Fresh Water Wells of Jaffna," through a correspondence which took place between Sir James Emerson Tennent and the late Dr. Buist, and which correspondence will be found in the Appendix to the forthcoming issue of the Society's Journal.

Your Committee cannot omit mention of the exhibition of Ceylon produce, held at the Queen's House in February last, under its direct management. The time allowed for collecting the many specimens exhibited was necessarily short, but your Committee were enabled by the active co-operation of gentlemen at outstations, to bring together a most interesting and instructive collection, illustrative of the industry and resources of the Western, Central, North-Western, and Southern Provinces. Many of the objects exhibited have been since placed in the Society's Museum, which is at length beginning to assume a proportion that will soon render a Catalogue necessary.

Your Committee have recently communicated with the chief Military authorities of the Island, with a view to ascertaining whether there would be any objection to the amalgamation of the Medical Museum with that of this Society, in the event of a qualified Curator being provided for the proper custody and enlargement of the collection ; and your Committee, although not as yet in possession of any reply to their application, have grounds for believing that their request will be complied with.

Since the last Anniversary Meeting the Society has lost several valued members, foremost amongst whom may be named the late Sir William Carpenter Rowe, whose attachment to, and exertions on, behalf of the Society, are well known to all its members.

The Society has also experienced a loss in the death of one of its oldest and most industrious members, the late Mr. Simon Casie Chetty, who contributed some most valuable papers to your Journal, and by these and other literary labours gave evidence of not only an intimate acquaintance with Tamil literature, but of a spirit of industrious research, of patient investigation, and of scholarly descrimination, rarely to be met with in the East.

In recoading their deep sense of these losses, the Committee are able, at the same time, to notice the accession to your body, of the present Chief Justice of Ceylon, who has already given an earnest of his good wishes on your behalf. Your Committee would also congratulate you on having obtained the valuable co-operation of so eminent a Páli scholar as Monsieur Grimblot.

This gentleman has consented to undertake the duties of Joint Secretary, and we may reasonably hope, that by the aid of his Oriental acquirements, the future proceedings of this Society will take a wider range, and assume a more elevated tone, whilst by means of translations and republications of some of the standard Historical and Buddhistical works of Ceylon, you may be the means of aiding the students of Páli literature in every part of the world. During the past year, the Society's Library has received many valuable additions, as may be seen by the Librarian's List.

The Museum has likewise been increased by many donations, chiefly of objects from the late Exhibition at Queen's House; but much yet remains to be done towards obtaining a collection of the many Raw Products of the Island, a large portion of which your Committee believe to be unknown to Europeans, but which might probably prove of considerable value as articles of export, or for local use.

Your Committee regret they are unable to report that the Society's Journal, for the past year, is in a very forward state, the great pressure of work in the Government Printing Office haviug prevented its progress until very recently.

It would appear that, if it be thought desirable that the Journal should be published with greater rapidity, and at more frequent intervals, it will be necessary that the Society undertake the printing at its own cost. Your Committee have commenced to reprint the earlier Numbers of the Journal, for which there exists an active demand both here and in Europe.

The Treasurer will place before you a statement of the accounts of the past year, from which it may be seen that there is a balance in hand of £80 11*s*. 9*d*.

In conclusion, your Committee beg to submit for your consideration, a list of the proposed Office-bearers for the ensuing year.

*Resolved* :—"That the Report now read be adopted and printed in the current Number of the Journal."

*Resolved* :—"That the following list of Office-bearers be adopted for the ensuing year."

Proposed by Dr. Misso.
Seconded by R. V. Dunlop, Esq.

*President :*

Sir Edward S. Creasy, Chief Justice.

*Vice-Presidents:*

The Rev. D. J. GOGERLY.
The Rev. B. BOAKE.

*Secretaries:*

Monsieur P. GRIMBLOT.

J. CAPPER, Esq.

*Treasurer:*

C. A. LORENZ, Esq.

*Librarian:*

Monsieur P. GRIMBLOT.

*Committee:*

C. P. LAYARD, Esq.
Colonel OUVRY.
J. F. DICKSON, Esq.
B. MOSS, Esq.
W. C. ONDAATJIE, Esq.
P. COOMARASAMY, Esq.
J. D'ALWIS, Esq.
R. DAWSON, Esq.
Rev. J. THURSTAN.

The following gentlemen were then proposed, and after a ballot, declared duly elected Members of the Society :—

Dr. R. Dane, P.M.O.

G. B. Capper, Esq.

The Proceedings were terminated by a vote of thanks to the Chairman.

---

## LETTERS FROM SIR J. E. TENNENT AND DR. BUIST, TO THE "ATHENÆUM," RELATIVE TO THE FRESH WATER WELLS OF JAFFNA.

*Allahabad, N. W. Province,*
*June* 10, 1860.

IN this out-of-the-way quarter of the world, where we are only beginning to replace the books the mutineers burned, and are drawing cautiously on our bookseller, in case a catastrophe of the like kind should occur again, I trust that you will pardon me for turning to a work reviewed in your pages eight months ago,—Sir Emerson Tennent's "Ceylon,"—which I have not been able to peruse, and of which I can only speak from the extracts I have read in the *Athenæum* and the *Edinburgh Review*, both of October. But the few points I desire to take up are of general and permanent interest, and have hitherto, as it seems to me, not been noticed in the manner they deserve. In both the reviews referred to, I find the following notice of the musical sounds

heard in Chilka Lake, a salt-water creek close by Batticaloa, on the eastern shores of Ceylon :—

"I distinctly heard the sounds in question. They came up from the water like the gentle thrills of a musical chord, or the faint vibrations of a wine-glass, when its rim is rubbed by a wet finger. It was not one sustained note, but a multitude of tiny sounds, each clear and distinct in itself ; the sweetest treble mingling with the lowest bass. On applying the ear to the wood-work of the boat, the vibration was greatly increased in volume by conduction. The sounds varied considerably at different points, as we moved across the lake, as if the number of the animals from which they proceeded was greater in particular spots ; and occasionally we rowed out of hearing of them altogether, until, on returning to the original locality, the sounds were at once renewed."

Will your readers oblige me by comparing this with the following note I published of Musical Fishes in a salt-water creek near Bombay, in the *Bombay Times* of January, 1847 :—

"A party lately crossing from the promontory in Salsette called the Neat's Tongue, to near Sewree, were, about sunset, struck by hearing long distinct sounds like the protracted booming of a distant bell, the dying cadence of an Æolian harp, the note of a pitch-pipe or pitch-fork, or any other long-drawn-out musical note. It was, at first, supposed to be music from Parell floating at intervals on the breeze ; then it was perceived to come from all directions, almost in equal strength, and to arise from the surface of the water all around the vessel. The boatmen at once intimated that the sounds were produced by fish, abounding in the muddy creeks and shoals around Bombay and Salsette ; they were perfectly well known, and very often heard. Accordingly, on inclining the ear towards the surface of the water, or, better still, by placing it close to the planks of the vessel, the notes appeared loud and distinct, and followed each other in constant succession. The boatmen next day produced specimens of the fish—a creature closely resembling in size and shape the fresh-water perch of the north of Europe—and spoke of them as plentiful and perfectly well known. It is hoped they may be procured alive, and the means afforded of determining how the musical sounds are produced and emitted, with other particulars of interest supposed new in Ichthyology. We shall be thankful to receive from our readers any information they can give us in regard to a phenomenon which does not appear to have been heretofore noticed, and which cannot fail to attract the attention of the naturalist. Of the perfect accuracy with which the singular facts above related have been given, no doubt will be entertained, when it is mentioned that the writer was one of a party of five intelligent persons, by all of whom they were most carefully observed, and the impressions of all of whom in regard to them were uniform. It is supposed that the fish are confined to particular localities —shallows, estuaries, and muddy creeks, rarely visited by Europeans ; and that this is the reason why hitherto no mention, so far as we know, has been made of the peculiarity in any work on Natural History."

Now, it was nearly impossible for Sir Emerson Tennent to have seen this, as it was altogether impossible for me to have known in 1847 anything about his visit to the Chilka Lake the following year ; and both descriptions, which, so far as the sounds of the fish are concerned, are in perfect harmony, are those of independent observers speaking of the same phenomenon, which I doubt not in both cases admits of the same

solution. In 1858, the present Governor of Ceylon visited Chilka Lake; he was obviously not aware of what Sir E. Tennent had heard or seen ten years before; his book was not published till 1859. He gives the following account of the music in the water, which is as nearly as possible the same as had been previously given. Mr. Ward being once more a perfectly independent witness:—

"I ought not to take my leave of Batticaloa, which I may not have an opportunity of revisiting, without mentioning the natural phenomenon for which its lake is remarkable—the singing fish. I was too ill during my stay in 1857 to expose myself in the night air upon the water, and I confess that, in spite of the impression then made upon my fellow-travellers, amongst whom were Major Gen. Lockyer and Capt. Gosset, I went out upon the present occasion with a considerable amount of incredulity, and was the last to believe the evidence of my own senses; Dr. Johnston being satisfied as to the existence of a sound apparently proceeding from the water long before I could realise it. But after changing the position of the boat once or twice, there could be no doubt about the matter. The sound rose and swelled, and absolutely vibrated about us in a manner that left no question as to the fact, whatever may be the causes. Its character is indescribable. It is not like any other sound. It is only heard at night. It has nothing harmonious or musical about it. There are no modulations, no variety of notes, except what the increase and decrease in strength produced. As to its origin, nobody knows anything. It may be the fish, to whom it is popularly attributed. It may be the rush of air through rocks partially hollowed. There is nothing but conjecture to guide us in this respect. The results all can vouch for. And these results are certainly more distinct within a limited distance from the shore, though heard occasionally in deep water. I am no naturalist. I can only state what I personally saw and experienced. Others must explain it. Something similar, it is said, occurs in the Bay of Naples. It is strange that between Naples and Batticaloa there should be this one point of resemblance."

Sir Emerson Tennent describes the same thing as heard by him at the same place in 1848; but he doubts if the sounds proceeded from fish, and ascribed them to shell-fish.

The following is an extract from a letter (February, 1849) I received a few weeks after the first notice had been published:—

"*Musical Fish.*—Sir,—In a late number of the *Times* I noticed some remarks respecting the musical fish, as they have been rather aptly termed; and it may be interesting to the readers of the *Times* to be informed, that the existence of such a phenomenon has been long known to the residents at Vizagapatam. I have heard the musical sounds, like prolonged notes on a harp, when rowing on the back water at that station; and they were generally supposed to proceed from the fish coming in contact with the sides of the boat. To the best of my recollection, the sounds were never heard at a distance from it."—*Bombay Times*, Feb. 13.

Vizagapatam, on the Coromandel Coast, is 498 miles north of Madras, the shores abounding with shallow salt-water creeks, like those on the eastern side of Ceylon, and all along the Malabar Coast. I think that I have very clearly made out that musical fishes do exist in abundance;

and as it is very difficult to conceive in what way the sounds are made under water, it would be well to have the subject more minutely inquired into.

I find the following in the Journal of the Samarang. I greatly doubt if it be the same variety of fish that I have noticed that are referred to :—

"Dr. Adams, the surgeon and naturalist of the expedition, says :— 'While on board the brig *Ariel*, then lying off the mouth of the river of Borneo, I had the good fortune to hear that solemn acquatic concert of the far-famed organ fish, or drum—a species of Pogonias. These singular fishes produce a loud monotonous singing sound, which rises and falls, sometimes dies away, or assumes a very low drumming character ; and the noise appeared to proceed mysteriously from the bottom of the vessel. This strange submarine chorus of fishes continued to amuse us for about a quarter of an hour, when the music, if so it may be called, suddenly ceased, probably on the dispersion of the band of performers.'"

Sir Emerson Tennent notices the fact of all the wells along shore which keep their water during the dry season, being below high-water mark, and that to a small extent they rise and fall with the tides ; and he assumes that they owe their water to the sea, which loses its saline matter by percolation. Nothing, surely, is more utterly opposed to the first principles of Physics than the doctrine, that salt held in chemical solution by water should be capable of being separated from it by the mechanical process of filtration. The phenomenon of tides in wells of moderate depth dug near the sea, is of universal occurrence all along the Malabar Coast, where the matter dug through is porous. It does not obtain in wells dug through trap. I have observed it hundreds of times at Bombay, and have often had occasion to describe it. The explanation is easy. The surface of the ground where the well is dug being always six or eight feet above high and twenty to twenty-six feet above low water, and being extremely spongy and porous down to where it comes in contact with the rock, or the blue-clay bed which commonly lies over the rock, it gets charged full of water during the rains. The superior length of column enables this to expel the sea water, a proceeding which must have been completed shortly after the emergence of the land from the sea ; while the interestices in the porous soil are so minute as to prevent the two mingling. As the saltest sea water has only a specific gravity of 1·050, the fresh water ponded back from it requires only to be proportionally higher in level to create an equilibrium. With a greater head than this, it will push the wall of salt water before it, and flow off. Of all this I have seen abundant examples at Bombay. It would occupy too much of your space to describe them. After six or eight months of rainless weather, when the discharge from the soil becomes feeble, the wells all become more or less brackish, and the apparent tide increases.

The *Edinburgh Review* states that this theory of Sir E. Tennent's, of the desalinization of sea water by filtration (as already said, a phenomenon opposed to one of the first laws of Chemistry) explains the occurrence of fresh water on coral islands, and confutes the theory of Darwin, that this arises from rain; as rain falling on a substance already fully saturated with sea-water would not be absorbed, but would flow off. Not a doubt of it. But coral islands are not only not saturated, but so much of them as is above the sea-level, three or four feet, is highly porous and perfectly dry, and presents all the conditions for absorbing the whole of the rain that falls on them. They present to the rain this much head of water to push out the sea and expel it piston-wise so far as the coral bed descends,—the sea itself forming the wall of the reservoir. A well dug deep into the coral to draw off the rain-water, with which it is always nearly saturated up to low-water mark, is sure to secure a supply. An illustration of the two not mixing together, if the pores of the soil, rock or coral, be fine enough, may be obtained by making the experiment with capillary tubes.

The red colour with which the sea is tinged round the shores of Ceylon, during a part of the S.W. monsoon, is due to the *Proto-coccus nivalis*, or the Himatta-coccus, which presents different colours at different periods of the year—giving us the seas of milk as well as those of blood. The coloured water at times is to be seen all along the coast north to Kurrachee, and far out, and of a much more intense tint in the Arabian Sea. The frequency of its appearance in the Red Sea has conferred on it its name.

Our author mentions terraces of marine shells embedded in agglutinated sand as prevailing all around the island at a level considerably above highwater mark. The same thing obtains all around the shores of the Mauritius, the Eastern Archipelago, the shores of Hindustan, the Arabian Sea and Red Sea, and, I believe, along the coasts of nearly all the seas in the world. The Reviewer states truly, that "this is an unquestionable evidence of an upheaval—the evidence of subsidence is more difficult to obtain." He is mistaken. From Cape Comorin to Kurrachee on the one side, and so all around the shores of the Bay of Bengal on the other, multitudes of mangrove roots, their fibres unbroken, and obviously existing where they grew, are found embedded in blue marine clay, from ten to twenty feet below the raised beaches, the surfaces of which, when formed, must themselves have been below half-tide,—as clear an evidence of a previous depression as the beaches are of an upheaval.

I trust I shall not be for a moment supposed inclined to criticize, much less to correct, this admirable and obviously most attractive work. I have taken some texts from it, from which to give some brief discourses on points of natural history which seem of interest, and which, though perfectly familiar to the old Indian, seem scarcely to have reached the English naturalist at all.

GEO. BUIST.

---

*London, August* 11, 1860.

I have seen in the *Athenæum* of this morning the interesting letter of Dr. Buist, dated Allahabad, June 10, in which exception is taken to a passage in my recently published work on Ceylon, where I have ventured to offer a simpler solution of the phenomenon of the steady supply of fresh water in wells sunk in coral islands, than that heretofore resorted to,—namely, the conjecture that the flow consists of rain-water imbibed from the surface, and banked in by the surrounding pressure of water from the sea. This theory, which was first broached in Admiral FitzRoy's "Voyages of the Adventure and Beagle," and in Darwin's "Naturalist's Journal," is thus propounded in the latter, when speaking of the Keeling Islands, in the Indian Ocean, south-west of Sumatra, one of those "atoll" groups, in the islets of which there are wells from which ships obtain water:—"At first sight," says Darwin, "it appears not a little remarkable that the fresh water should regularly ebb and flow with the tides; and it has even been imagined that sand has the power of filtering the salt from the sea-water * * The compresed sand, or porous coral rock, is permeated like a sponge with the salt water; but the rain which falls on the surface must sink to the level of the surrounding sea, and must accumulate there, displacing an equal bulk of the salt water. As the water in the lower part of the great sponge-like mass rises and falls with the tides, so will the water near the surface; and this will keep fresh, if the mass be sufficiently compact to prevent much mechanical mixture."—*Darwin's "Naturalist's Journal,"* chap. xx. Dr. Buist's explanation corresponds with that of Darwin; but Darwin, as it will be seen, glances at, although he rejects the theory of filtration from the sea; whilst Dr. Buist urges, that "Nothing is more utterly opposed to the first principles of physics than the doctrine that salt held in solution by water should be capable of being separated from it by the mere mechanical process of filtration." Dr. Buist, however, is not aware that since Darwin wrote, the late Mr. Witt, in a remarkable paper published in the *Philosophical Magazine* for 1856, "On a Peculiar Power possessed by Porous Media of removing Matters from Solution in Water" has made known the results of

experiments carried on by him on behalf of one of the London water-supply Companies, and has shewn that "water containing considerable quantities of saline matter in solution, may, by percolating through great masses of porous strata during long periods, be gradually deprived of its salts, to such an extent as probably to render even salt water fresh." The difficulty which I felt in applying Darwin's ingenious theory to the small coral islands in which fresh water abounds, as well as to wells sunk in the coral formation at the north of Ceylon, arose from the fact, that in the latter, rain falls with such proverbial infrequency as to be inadequate to furnish the supply of fresh water invariably present; whilst in the numerous little coral islands to the west, the area of each is so minute, that their surface, even in the most rainy seasons, could not intercept enough to replenish the wells. Mr. Witt's discovery came opportunely to aid, and facts are recorded in other portions of my book (vol. 1, p. 20; vol. 2, p. 536) besides those which alone Dr. Buist appears to have seen, that in my mind establish the fact that these wells are supplied, not by the banking in of rain by the surrounding salt water, but by the slow percolation of water from the sea through the masses of porous coral.

J. Emerson Tennent.

BRITISH MUSEUM NATURAL HISTORY

*It is requested that all communications to the Honorary Secretaries may be forwarded to them under cover to the Hon'ble the Colonial Secretary.*

*Specimens for the Society's Museum, or Contributions to the Library, may be forwarded free by Parcel Tappal, or by the Government Steamer "Pearl," addressed in a similar manner.*